

HIDDEN HILLS SOLAR ELECTRIC GENERATING SYSTEM (HHSEGS)

Final Staff Assessment



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HIDDEN HILLS SOLAR GENERATION SYSTEM (11-AFC-2)

FINAL STAFF ASSESSMENT

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EXECUTIVE SUMMARY

Testimony of Mike Monasmith

INTRODUCTION

This Final Staff Assessment (FSA) contains staff's independent evaluation of the BrightSource Energy, Inc. (Applicant) Hidden Hills Solar Electric Generating System (HHSEGS) Application for Certification (11-AFC-2). The FSA examines engineering, environmental, public health, and safety aspects of the proposed HHSEGS project, based on the information provided by the applicant, government agencies, interested parties and other sources available at the time the FSA was prepared. The FSA includes analyses prepared to satisfy the requirements of the California Environmental Quality Act (CEQA).

The Energy Commission is the CEQA lead agency. In addition to CEQA analyses, the FSA must consider whether the project conforms with all applicable local, state, and federal laws, ordinances, regulations and standards (LORS). The FSA also recommends measures to mitigate significant and potentially significant environmental effects, which take the form of conditions of certification for construction, operation, maintenance, and eventual decommissioning of the project, if approved by the Energy Commission.

This FSA is not the decision document for these proceedings, nor does it contain findings of the Energy Commission related to environmental impacts or the project's compliance with local/state/federal legal requirements. However, the FSA does include "Proposed Findings of Fact" for each of its 21 separate technical sections.

The FSA serves as staff's testimony in evidentiary hearings to be held by the HHSEGS Committee (composed of Commissioner and Presiding Member Karen Douglas, Commissioner and Associate Member Carla Peterman, and Hearing Officer Kenneth Celli), who oversee this case. The Committee will hold evidentiary hearings in January 2013, and will consider the recommendations presented by staff, the applicant, intervenors, governmental agencies, and the public prior to proposing its recommended decision to the full Commission. Energy Commissioners will make a final decision on HHSEGS, including findings, after the Committee's publication of the Presiding Member's Proposed Decision (PMPD).

PROPOSED PROJECT LOCATION, DESCRIPTION AND COMPONENTS

HHSEGS is proposed to be located on approximately 3,097 acres of privately owned land leased in Inyo County, California, adjacent to the Nevada border. The project site is approximately 8 miles directly south of Pahrump, Nevada (with a driving distance of 28 miles), and approximately 45 miles northwest of Las Vegas, Nevada (**Project Description Figure 1**). The project site is currently undeveloped and unoccupied. This rural area is primarily served by State Route (SR) 160, Old Spanish Trail Highway (also known as "Tecopa Road") and various unpaved roads. A sparsely populated residential community, Charleston View, lies immediately south of the proposed project site and Tecopa Road.

The HHSEGS project is being developed by Hidden Hills Solar I, LLC, and Hidden Hills Solar II, LLC. Hidden Hills Solar I, LLC, and Hidden Hills Solar II, LLC, are wholly owned

subsidiaries of Hidden Hills Solar Holdings, LLC, which is in turn a wholly owned subsidiary of BrightSource Energy, Inc., (Applicant).

HHSEGS would comprise two solar fields and associated facilities: the northern solar plant (Solar Plant 1) and the southern solar plant (Solar Plant 2). Each solar plant would generate 270 megawatts (MW) gross (250 MW net), for a total net output of 500 MW. Solar Plant 1 would occupy approximately 1,483 acres (or 2.3 square miles), and Solar Plant 2 would occupy approximately 1,510 acres (or 2.4 square miles). A 103-acre common area would be established on the southeastern corner of the site to accommodate an administration, warehouse, gas metering station, and a 138kV transmission switchyard and maintenance complex. A temporary construction lay-down and parking area on the west side of the proposed site would temporarily occupy approximately 180 acres. The temporary construction laydown area in addition to the entire HHSEGS site would total 3,277 acres.¹

If permitted, Solar Plant 1 and Solar Plant 2 would take approximately 29 months to construct. Average and peak workforce is estimated at approximately 1087 and 2293 workers, respectively, consisting of construction craft people, supervisory, support, and construction management personnel onsite during construction. The peak construction site workforce level is expected to occur in month 19 of the 29-month construction period. Construction-related truck traffic would be entering and leaving the project on to Tecopa Road by way of what is now known as Topaz Street, at the westernmost boundary of the project site.

Project Features and Facilities

Each solar plant would use heliostats (elevated mirrors guided by a tracking system mounted on a pylon) to focus the sun's rays on a solar receiver steam generator (SRSG) – a solar boiler used to make steam which can then generate electricity – atop a solar “power tower” near the center of each solar field. The solar field and power generation equipment would start each morning after sunrise and, unless augmented by auxiliary boilers, would shut down when insolation (sun ray intensity) drops below the level that would be required to keep the turbines online and producing electricity. Please see the **Project Description** section of this **FSA** for specific discussions on the following project components: Solar Field, Solar Plants, Steam Turbine Generators, Natural Gas Auxiliary Boilers, Boiler Feedwater System, Condensate System, Demineralized Water System and Power Cycle Makeup and Storage. **Project Description Figure 8** illustrates the technology of the proposed HHSEGS.

Water Supply and Use

Groundwater would be drawn daily from six onsite groundwater supply wells that would be drilled and developed to provide raw water for the HHSEGS project; two new wells per power block (primary and backup) and two wells at the administration complex. The wells would supply both solar plants and would be used for the power cycle make-up water, mirror wash water, and other domestic uses. The entire 500-MW net project would require up to 84.5 gallons per minute (gpm) (average) raw water make-up, with 30 to 50 gpm required by each plant, and 3.5 gpm (average) required for potable water use. The total annual water

¹ 3,277 acres would be leased by Applicant on land owned by The Roland John Wiley Trust, The Mary Wiley Trust and Section 20, LLC.

use for HHSEGS would be 140 acre feet² per year. The **Water Supply** section of this **FSA** details the various aspects of this critical natural resource.

HHSEGS would generate electricity up to 16 hours a day. However, the water treatment plant would operate continuously in order to minimize water treatment system size and capital costs, and to use off-peak energy at night. A breakdown of the estimated average daily quantity of groundwater required for HHSEGS operation is presented in **Table 1**. The daily water requirements shown are estimated quantities based on HHSEGS operating at full load.

TABLE 1
Average Daily Water Requirements with Both Solar Plants in Operation

Water Use	Average Daily Use (gpm)	Annual Use (ac-ft/yr)
Process and heliostat wash	84.5	135
Potable water service (including Common Area)	3.5	5

ac-ft/yr = acre-feet per year

To reduce the number of truck trips during construction, the applicant proposes to drill a temporary well to be used during construction only, primarily for the onsite concrete batch plant that would be used to serve project construction needs. This temporary well would eliminate the need to bring water to the construction area via tanker truck, and would not increase water usage above the 288 acre-feet per year needed during the 29-month construction period.

Electrical Transmission System

The HHSEGS would interconnect to the Valley Electric Association (VEA) system³. The interconnection would require an approximately 10-mile long generation tie line (gen tie line) from the HHSEGS to the proposed Crazy Eyes Tap Substation⁴, where the project would interconnect to the VEA electric grid. The gen tie line would originate at the HHSEGS's onsite switchyard, cross the state line avoiding the mesquite vegetation to the south and continue east for approximately 1.5 miles until reaching Tecopa Road. At Tecopa Road, the route would head northeast paralleling Tecopa Road until it reaches the Crazy Eyes Tap Substation, which would be located immediately east of the Tecopa Road/SR 160 intersection. The Crazy Eyes Tap Substation would interconnect to the existing VEA Pahrump Bob Tap 230 kV line. Please see **Project Description Figure 6**.

The bulk of the electric power produced by the facility would be transmitted to the grid. A small amount of electric power would be used onsite to power auxiliaries such as pumps and fans, control systems, and general facility loads including lighting, heating, and air conditioning. Some power would also be converted from alternating current (AC) to direct current (DC) and stored in batteries, which would be used as backup power for the plant control systems and essential uses.

² An acre foot of water equals 325,851 gallons.

³ In January 2013, VEA will become a participating transmission owner (PTO) and will turn operational control of its facilities over to the California Independent System Operator (CAISO).

⁴ In the HHSEGS Application for Certification, this substation was referred to as the Tap Substation.

Natural Gas Supply System

A 12-inch diameter natural gas pipeline would be required for the HHSEGS project. Kern River Gas Transmission Company (KRG T) proposes to construct the pipeline from the HHSEGS meter station, to be located in the HHSEGS Common Area, extending 32.4 miles to KRG T's existing mainline system just north of Goodsprings in Clark County, Nevada. The HHSEGS meter station, including pig receiver facilities, would be approximately 300 feet by 300 feet and would be surrounded by a 6-foot tall chain link fence topped with three strands of barbed wire (approximately 7 feet high total). The meter station would be shaded by a canopy to cover the meter runs and associated instrumentation and valves. A data acquisition and control (DAC) building would be located within the meter station. Data acquisition, control, uninterrupted power supply (UPS), and communication equipment would be installed inside the DAC building. Yard lights would be installed on the DAC building and meter building exterior. In addition, the light fixtures would be shielded or hooded and directed downward.

Facilities in Nevada subject to federal analysis

The FSA focuses on the HHSEGS project that would be built in California and its local and regional environmental impacts. Features of the project built in Nevada (e.g., the transmission line and natural gas supply line) may be mentioned to provide informational context. However, projects (or parts of projects) to be located in Nevada are not required to be analyzed under CEQA if they are assessed separately pursuant to federal environmental law (the National Environmental Policy Act, or "NEPA"). The federal Bureau of Land Management (BLM) is preparing NEPA analysis for the transmission and gas line project elements. Accordingly, the FSA does not focus on the parts of the project in Nevada, and proposes no mitigation for those elements of the project.

PROPOSED HHSEGS PROJECT OBJECTIVES

The project objectives of the Hidden Hills Solar Electric Generating System (HHSEGS) are based on applicant's stated project objectives, but modified to allow the reasonable range of alternatives required by CEQA:

- Safely and economically construct and operate a nominal 500-megawatt renewable electrical generation facility resulting in sales of competitively priced renewable energy consistent with the needs of California utility companies;
- Develop a renewable energy facility that will supply electricity for use by retail sellers and publicly owned electric utilities to help satisfy their required California Renewables Portfolio Standard (RPS) program goals;
- Develop a renewable energy facility capable of providing grid support by offering power generation that is flexible;
- Develop a renewable energy facility in an area with high solar insolation (high solar energy intensity);
- Ensure construction and operation of a renewable electrical generation facility that will meet permitting requirements and comply with applicable laws, ordinances, regulations, and standards (LORS);

- Develop a renewable energy facility in a timely manner that will avoid or minimize significant environmental impacts to the greatest extent feasible;
- Obtain site control and use within a reasonable time frame; and
- Develop a renewable energy facility in an area with high solar value and minimal slope.

PUBLIC AND AGENCY INVOLVEMENT

PUBLIC COORDINATION

The Energy Commission collaborated with a number of state and federal agencies in order to facilitate robust public participation in the regulatory review of HHSEGS. To reach this goal, Energy Commission staff conducted ten Workshops during the 180-day discovery phase; and four PSA Workshops between publication of the PSA in late May 2012 and publication of the FSA in October of 2012. These Workshops allowed parties to the proceeding the opportunity to informally discuss several technical issues related to the proposed project; determine if HHSEGS should be approved for construction and operation; and, if approved, under what set of conditions. These workshops helped inform the discovery and analysis process for the proceeding, and provided the public, parties to the proceeding (including applicant and intervenors), as well as local, state, and federal agencies the opportunity to ask questions about, and provide input on, the proposed project. The Energy Commission issued notices for each of these workshops a minimum of ten days prior to each meeting, and posted them accordingly. Moreover, parties to the proceeding and members of the public were also provided opportunities to keep abreast of the proceeding, and make comments, during seven monthly Status Conferences held by the HHSEGS Committee between January and August of 2012.

INITIAL PUBLIC NOTICE AND OUTREACH

On November 3, 2011, the Energy Commission held a publicly-noticed Informational Hearing at the Tecopa Community Center in Tecopa, Inyo County, California. The hearing followed a Site Visit and brief presentation at the proposed project site. **Executive Summary Figures 1 – 5** provide views from various locations on the proposed project site; these pictures were taken during the November 3, 2011, Site Visit and an earlier October 27, 2012, staff field trip and workshop⁵.

ENERGY COMMISSION STAFF'S PUBLIC OUTREACH

Energy Commission staff typically provides formal notices to property owners within 1,000 feet of the proposed site and within 500 feet of a linear facility (such as transmission lines, gas lines and water lines). Staff mailed notices on August 19, 2011, informing the public, agencies, and elected officials of the Commission's receipt and availability of the Application for Certification, 11-AFC-2. Following publication of the Preliminary Staff Assessment on May 24, 2012, notices were likewise distributed informing property owners of the PSA (and June 15, 2012 Supplemental Staff Assessment, which contained the preliminary Cultural Resources staff assessment). Each notice contained a link to the Commission-maintained HHSEGS project website (<http://www.energy.ca.gov/sitingcases/hiddenhills/index.html>).

⁵ tn:62873 11/10/2011, M. Monasmith Photos of 10-27-11 Field Trip and 11-3-11 Site Visit: http://www.energy.ca.gov/sitingcases/hiddenhills/documents/2011-10-27_Field_Trip_and_Site_Visit_Photos.pdf

LIBRARIES

On August 19, 2011, Energy Commission staff also sent paper copies of the Hidden Hills Solar Electric Generating System AFC to the following libraries:

Pahrump Community Library
701 East Street
Pahrump, NV 89048

Barstow Branch Library
304 E. Buena Vista Street
Barstow, CA 92311

Inyo County Library
168 North Edwards Street
Independence, CA 93626

Inyo County Library
410 Hot Springs Rd
Tecopa, CA 92389

Likewise, on June 1, 2012, Energy Commission staff distributed copies of the PSA to the same library list (and also distributed copies of the June 15, 2012 Supplemental Staff Assessment, or “SSA”). In addition to the local libraries listed above, copies of the AFC, PSA and SSA were also made available at the Energy Commission’s Library in Sacramento, the California State Library in Sacramento, as well as, state libraries in Eureka, Fresno, Los Angeles, San Diego, and San Francisco.

ENERGY COMMISSION’S PUBLIC ADVISER’S OFFICE

The Energy Commission’s outreach program is also facilitated by the Public Adviser’s Office (PAO). The PAO requested public service announcements at a variety of organizations, distributed notices informing the public of the Commission’s receipt of the HHSEGS Application for Certification (AFC), and invited the public to attend the Public Site Visit (of the proposed HHSEGS site) and Informational Hearing/BLM Scoping Meeting on November 3, 2011 in Tecopa (Inyo County), California.

PUBLIC WORKSHOPS

Staff from the Energy Commission organized and conducted numerous Data Request, Data Response and Issues Resolution and PSA Workshops in the following California communities: Bishop, Shoshone and Tecopa (Inyo County), and Sacramento, California, as well as Pahrump, Nevada. A total of ten publicly-noticed workshops conducted during discovery were held on the following days: October 21 and 27, 2011; November 18, 2011, December 1 and 16, 2011; January 18, 2012; February 22, 2012; April 26 and 27, 2012; and May 9, 2012. PSA Workshops were held on June 14 and June 27, 2012, July 3, 2012 and August 28, 2012. During each of these workshops, specific time for public participation was allocated, and public comments were taken. These workshops provided a public forum for the applicant, interveners, staff and cooperating agencies to interact regarding project issues. Specific information related to the HHSEGS proceeding, including details on public participation, as well as ongoing Committee notices and announcements, can be reviewed at the following Energy Commission website:

<http://www.energy.ca.gov/sitingcases/hiddenhills/notices/index.html>

AGENCY COORDINATION

On August 19, 2011, the Energy Commission staff sent a notice of receipt and a copy of the HHSEGS Application for Certification to all local, state, and federal agencies that may have an interest in the proposed project. Likewise, on June 1, 2012, Energy Commission staff sent a notice of receipt and copy of the HHSEGS Preliminary Staff Assessment to the same

agency list. These notices sought cooperation and or comments from critical regulatory agencies that administer LORS which may be applicable to the proposed project.

These agencies included the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service (USFWS), U.S. Army Corps of Engineers, U.S. Bureau of Reclamation, Inyo County, California Department of Transportation, State Water Resources Control Board, Lahontan Regional Water Quality Control Board, California Department of Fish and Game (CDFG), and the California Air Resources Board/Big Basin Air Quality Management District, among others. Staff (particularly the Biological Resources staff) worked collaboratively with the CDFG and the USFWS to evaluate the proposed HHSEGS project, and provided input⁶ that informed staff's analyses contained within this Final Staff Assessment.

CONSULTATION WITH LOCAL NATIVE AMERICAN COMMUNITIES

Energy Commission staff conducted pre-filing consultation with several local Native American tribes regarding the proposed HHSEGS project on August 2, 2011, at the Pahrump Community Library in Pahrump, Nevada. The meeting was designed to seek comments and input on the proposed project, and served as an early invitation for tribes to consult on the project before it was officially filed with the Energy Commission. Following written and verbal correspondence between staff and tribal representatives, additional meetings occurred with tribal representatives in December, 2011 and January, 2012. Following the January 19, 2012, meeting in Shoshone, California, Energy Commission staff ethnographer, Dr. Thomas Gates, embarked on a series of in-depth meetings and interviews with members of the local Pahrump Paiute tribe to document the stories, songs and history of Native American life for the project site and the larger project area. These accounts are provided in the **Cultural Resources** section of this document.

RESPONSE TO COMMENTS

Thirteen organizations, including public agencies; members of the public; intervenors; and the applicant, BrightSource Energy, LLC, submitted comments on the May 24, 2012, Preliminary Staff Assessment (PSA). A Supplemental Staff Assessment (SSA) containing staff's preliminary **Cultural Resources** analysis was subsequently published on June 15, 2012. The deadline for submitting comments on both the PSA and SSA was July 23, 2012.

Comments were received from three public agencies -- Inyo County (Inyo Co.), U.S. Bureau of Land Management (BLM) and the National Park Service (NPS); and three conservation organizations — the Amargosa River Conservancy (Amarg. River), The Nature Conservancy (TNC), and Basin and Range Watch (Basin & Range Watch). Several Native American organizations also submitted comments, including Richard Arnold (now an Intervenor in the Hidden Hills SEGS proceeding), Pahrump Paiute Tribe (Paiute Tribe) and the Big Pine Paiute Tribe of the Owens Valley (Big Pine Tribe). Intervenor's submitting comments (in addition to Richard Arnold) include the Center for Biological Diversity (CBD), Cindy

⁶ Several Records of Conversation (ROC) reflect the high-level of information exchange between USFWS and CDFG staff biologists and Energy Commission staff: <http://www.energy.ca.gov/sitingcases/hiddenhills/documents/roc/>

MacDonald (Cindy Mac) and the Old Spanish Trail Association (OSTA). The final commenter listed in **Table 2** below is the applicant, BrightSource Energy, LLC (BSE). Following submission of the comment letters, staff bracketed each letter in order to highlight the pertinent questions and issues for review. The comment letters can be reviewed in **Appendix RTC**.

Table 2
Response to PSA Comments Matrix

	Inyo Co.	BLM	NPS	Amarg. River	TNC	Basin & Range Watch	Richard Arnold	Paiute Tribe	Big Pine Tribe	CBD	Cindy Mac	OSTA	BSE	<u>TOTALS:</u>
AQ/GHG	3										105		44	152
Alts				2		6			1	8	4		62	83
Bio	20	1		1	2	15	1	1	2	36	7		176	262
Cultural	2		1	1		2	5	7	6	6		7	76	113
Haz Mat											6		6	12
Land Use	7										10		36	53
Proj. Desc	4										10		12	26
Socio	40			1		3	3		1	2	13		64	127
Soils	1	2									62		12	77
TSLN													8	8
Traffic	7										3		27	37
Public Health											16		6	22
Visual	2			1		16		1			13		60	93
Waste	3										30		8	41
WS/FP											1		7	8
Water	11	7		7	21	6		1	1	3	31		79	167
Efficiency													10	10
Facility Design											18		3	21
Geo/Paleo													27	27
Noise	1										18			19
Reliability													2	2
TSE											6		5	11
<u>TOTALS:</u>	101	10	1	13	23	48	9	10	11	55	353	7	730	1371

Environmental Justice

Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations,” focuses federal attention on the environment and human health conditions of minority communities and calls on federal agencies to achieve environmental justice as part of its mission. The order requires the United States Environmental Protection Agency (EPA) and all other federal agencies to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority or low-income populations. Some agencies have also interpreted this order as applying to state agencies that receive federal funding. Energy Commission staff assumes that the order applies, and conducts its analysis accordingly.

Environmental Justice: Guidance Under the National Environmental Policy Act, defines minority individuals as members of the following groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. The focus of the screening analysis under the guidance is to determine whether there is a minority/low income population adversely affected by a project that is greater than fifty percent or when the minority population percentage is “meaningfully greater” than that of the population in the general population or other appropriate unit of geographic analysis (please see **Socioeconomics Figure 1**). *Final Guidance for Incorporating Environmental Justice Concerns in EPA’s Compliance Analyses* (US EPA 1998) also encourages including outreach to community-based organizations and tribal governments early in the screening process, in order to identify the presence of distinct minority communities residing both within, and in close proximity to, the proposed project. It also identifies those minority groups that utilize or are dependent upon natural and cultural resources that could be potentially affected by the proposed action.

In addition to the demographic screening analysis, staff follows the steps recommended by the U.S. EPA’s guidance documents in regard to outreach and involvement, and if warranted, a detailed examination of the distribution of impacts on segments of the population. Under this federal approach, staff determined that the minority population identified in **Socioeconomics Figure 1** does not constitute an environmental justice population. Accordingly, no further environmental justice analyses are necessary.

CUMULATIVE EFFECTS

Staff conducted an extensive search of past, present, and reasonably foreseeable “probable” future projects in Inyo County (CA), Pahrump Valley (CA and NV), Mesquite Valley (CA), Ivanpah Valley (CA and NV), and Piute Valley (NV) (see **Cumulative Effects Figure 1**). Staff reviewed project tracking information and available environmental reports and notices through various resources, including websites of local, regional and state jurisdictions and the U.S. Bureau of Land Management (CA and NV). Additionally, staff queried project managers from various California and Nevada public agencies to compile a comprehensive list of past, present and probable future projects that resulted in a full list of cumulative projects. **Table 3** below presents a master list of the projects considered part of the HHSEGS cumulative setting.

The State CEQA Guidelines define cumulative impacts as “two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.” (Cal. Code Regs., tit. 14, § 15355.) The CEQA Guidelines continue: (a) “[t]he individual effects may be changes resulting from a single project or a number of separate projects” and (b) “[t]he cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.” (*Ibid.*)

Accordingly, staff in each technical section of this FSA determined which of the “closely related” projects from the Cumulative Projects list could create impacts specific to their technical area or discipline. Staff developed lists for each discipline, then evaluated whether the cumulative effect(s) were significant, and if so, whether the proposed project’s contribution to that combined effect would be “cumulatively considerable.”⁷ Therefore, this FSA attempts to analyze the impacts of all aspects and phases of HHSEGS, including the combined effect the proposed project would have in conjunction with other projects.

Table 3
Hidden Hills Master List of Cumulative Projects

Project Name; Agency ID	Location	Ownership	Status	Project Description
St. Therese Mission	881 E. Old Spanish Hwy, approx. 1.5 miles west of CA/NV border along Tecopa Road.	Magnificat Ventures Corporation, Las Vegas, NV	Inyo Co. approved June 2010	17.5 acre environmental park, memorial and internment center
Pahrump Airport	Pahrump, NV	Nye County	EIS in preparation	The Town of Pahrump, Nevada, proposes to lease approx. 650 acres of Bureau of Land Management (BLM) - managed public land to build and operate a new public-use, general aviation airport in the southwest portion of the town.
Element Solar (NVN 089655)	Pahrump Valley, 6 ½ miles north of proposed HHSEGS in NV	First Solar Development	POD	100 megawatt (MW) Photovoltaic (PV) project 2,560 acres land requested
Amargosa Farm (NVN 084359)	80 miles northwest of Las Vegas, in the Amargosa Valley in Nye County, NV	Solar Millennium	On hold	Two 250 MW dry-cooled solar power plants (parabolic solar trough) equipped with thermal energy storage on 4,350 acres of BLM-administered property. http://www.blm.gov/nv/st/en/fo/lvfo/blm_programs/energy/proposed_solar_millennium.html
PSI Amargosa PV Solar Project (NVN 084465)	South of Amargosa Valley, Nye County, NV	Pacific Solar Investments, Inc. (Iberdrola)	Public Scoping	150 MW solar PV project with a developed area of 1,700 acres of BLM-managed lands in Nye County, Nevada. No water or fuel required to operate PV solar systems according to Pacific Solar Investments. http://www.blm.gov/nv/st/en/fo/lvfo/blm_programs/energy/PSI_Amargosa_PV_Solar_Project.html
Silver State South Solar Project (NVN 089530, NVN 085801)	Just south of Primm, NV, on the CA/ NV border	First Solar Development	Record of Decision, 10/12/10	350 MW solar PV project located on approximately 2,900 of public land administered by the Bureau of Land Management (BLM) in Clark County, Nevada near Primm. The project consists of Phases II and III. http://www.blm.gov/nv/st/en/fo/lvfo/blm_programs/energy/nextlight_renewable0.html

⁷ “Cumulatively considerable” means that the incremental effects of an individual project are significant when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects. (Cal.Code Regs., tit. 14, section 15064, subd. (h)(1).)

Project Name; Agency ID	Location	Ownership	Status	Project Description
Stateline Solar Farm (CACA 048669)	Just south of Primm, NV, on the CA/ NV border	First Solar Development	DEIS pending	300 MW solar PV project in Eastern San Bernardino County, two miles southwest of the CA/NV border on 2,114 acres of Federal land managed by the BLM. http://www.blm.gov/ca/st/en/prog/energy/fasttrack/stateline/fedstatus.html
Sandy Valley (NVN 090476)	Clark Co., NV, approx. 8 miles southeast of proposed HHSEGS near Highway 160	Bright Sources Energy Solar Partners	POD	750 MW, 170 AFY, 15,190 acres http://wilderness.org/files/Joint-Comments-on-the-Supplement-to-the-Draft-Solar-PEIS.pdf A BrightSource Energy project to use proprietary solar "power tower" technology.
Searchlight Wind Energy (NVN 084626)	Searchlight, NV	Duke Energy	Draft EIS published Jan. 2012	200 MW wind energy facility consisting of up to 140 wind turbine generators (maximum 427.5 ft. tall) located on 18,949 acres of both private and BLM-administered lands in the Eldorado Mountains. http://www.blm.gov/nv/st/en/fo/lvfo/blm_programs/energy/searchlight_wind_energy.html
Southern Owens Valley Solar Ranch	Southern Owens Valley in Inyo County	LADWP	DEIS being prepared	200 MWs of solar photovoltaic electrical energy and associated equipment within a 3,100-acre area in the southern Owens Valley in Inyo County.
Lathrop Wells Solar (NVN 086571)	Amargosa Valley, Nye Co, NV	Abengoa Solar	DEIS pending	Phase I – 250 MW, Phase II – 250 MW. 5,336 acres. CSP/Trough. http://www.blm.gov/nv/st/en/fo/lvfo/blm_programs/energy/Lathrop_Wells_Solar.html
Table Mountain (NVN 073726)	Clark County, NV	Table Mountain Wind, LLC.	Renewal, testing	205 MW, 15 MET towers/turbines, 8,300 acres BLM land, 249 disturbed acres. http://www.blm.gov/pgdata/etc/medialib/blm/nv/energy_Par.56189.File.dat/renewable_energy_project_table_feb2011.pdf
South Solar Ridge (NVN 086782)	Clark/Nye counties, NV	Southwest Solar Land Co (First Solar)	POD	50 MW PV project on 530 acres. http://www.blm.gov/pgdata/etc/medialib/blm/nv/energy_Par.56189.File.dat/renewable_energy_project_table_feb2011.pdf
Hidden Hills Valley Electric Transmission Project (NVN 089669)	Clark County, NV	Valley Electric Association	DEIS pending (BLM lead)	A new 10-acre 230/500 kV Substation located immediately northeast of the existing VEA 138 kV and VEA 230 kV transmission line alignments adjacent to Highway 160. Approximately 9.7 miles of new 230 kV single circuit transmission line from the HHSEGS project site to the new Substation. Approximately 53.7 miles of new 500 kV Transmission Line from the Tap Substation to the existing Eldorado Substation. http://www.blm.gov/nv/st/en/fo/lvfo/blm_programs/energy/hidden_hills_transmission.html
Calnev Pipeline Expansion Project	Counties of San Bernardino, CA and Clark, NV, plus various cities along the Interstate 15 corridor from Colton, CA to Las Vegas, NV	Kinder Morgan Energy Partners, LP	DEIS/DEIR published March 2012	Add an additional refined petroleum products pipeline in CA and Nevada, to expand the capacity of the Calnev Pipeline System. The project would involve the construction, operation, and maintenance of a new 16-inch-diameter, 233-mile long pipeline and ancillary facilities from an existing facility in Colton to McCarran International Airport in Las Vegas.

Alternatives Summary

Section 15126.6(a) of the State CEQA Guidelines indicates that the alternatives analysis must "describe a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives." CEQA also requires (1) evaluation of a "no-project alternative," (2) identification of alternatives that were initially considered but then rejected

from further evaluation, and (3) identification of the “environmentally superior alternative” among the other alternatives (Cal. Code Regs., tit. 14, §15126.6).

Staff reviewed many potentially feasible off-site alternatives and alternative renewable technologies during the effort to determine the scope and content of the alternatives analysis. That review led to selection by staff of these six project alternatives for CEQA analysis and comparison to the proposed HHSEGS project:

- No-Project Alternative
- Sandy Valley Off-site Alternative (same technology as the proposed project)
- Solar Power Tower with Energy Storage Alternative (at the proposed HHSEGS site)
- Solar Photovoltaic Alternative (at the proposed HHSEGS site)
- Parabolic Trough Alternative (at the proposed HHSEGS site)
- Reduced Acreage Alternative

Staff’s alternatives analysis includes an assessment of the potential for each project alternative to attain the basic project objectives and identifies potential feasibility issues.

The primary environmental benefits of the Solar Photovoltaic (PV) Alternative compared to the proposed project are reduced impacts on Water Supply, Visual Resources, and Cultural Resources. The Solar PV Alternative would also reduce the potential for avian species to collide with project structures and eliminate the potential for mortality from exposure to concentrated solar flux. Staff concludes that the Solar PV Alternative would be environmentally superior to the proposed project. A full analysis of the environmentally superior alternative that compares the effects of each of the project alternatives to the proposed HHSEGS project is included in the **Alternatives** section of this final staff assessment.

FINAL STAFF ASSESSMENT CONCLUSIONS

Each technical area section of the FSA contains a discussion of the project setting, impacts, findings of fact, and where appropriate, mitigation measures and conditions of certification. The FSA includes staff’s assessment of these aspects of the proposed project:

- the environmental setting of the proposal;
- impacts on public health and safety, and measures proposed to mitigate these impacts;
- environmental impacts, and measures proposed to mitigate these impacts;
- the engineering design of the proposed facility, and engineering measures proposed to ensure construction and operation of the proposed project could be accomplished safely and reliably;
- project closure;
- project alternatives;
- compliance of the project with all applicable laws, ordinances, regulations and standards (LORS) during construction and operation;

- environmental justice for minority and low income populations, when appropriate; and
- proposed conditions of certification.

Staff has prepared its final analyses and made proposed findings and recommendations for all technical areas. These proposed findings followed the publication of staff's Preliminary Staff Assessment (PSA) on May 24, 2012. As indicated above, staff conducted four public PSA workshops in the months following the PSA's release: on June 14, 2012 in Pahrump, Nevada (discussions included Traffic & Transportation, Water Supply, Worker Safety / Fire Protection and Visual Resources); on June 27, 2012 in Bishop, California (discussions included Biological Resources, Socioeconomics, Air Quality and Public Health); July 3, 2012 in Sacramento, California (discussions included Alternatives, Biological Resources, Cultural Resources and Transmission System Engineering); and, August 28, 2012 (joint workshop focused on solar flux / avian impacts). As a result of these PSA Workshops, and PSA Comments received, staff developed additional analyses and recommended mitigation measures in critical technical areas. These new analyses and recommendations include Biological Resources (solar flux impacts detailed in **Appendix BIO-1** and **Appendix BIO-2**), and Worker Safety / Fire Protection and Socioeconomics (Emergency Services impacts and mitigation measures related to Southern Inyo Fire Protection District).

Based upon the information provided, discovery achieved and analyses completed, staff concludes that the HHSEGS project does not comply with all applicable laws, ordinances, regulations and standards (LORS). Specifically, there is non-compliance, or potential non-compliance, for **Biological Resources** (prohibited take of fully protected golden eagle), **Land Use** ((County of Inyo General Plan, Zoning Ordinance and Renewable Energy Ordinance [Title 21])), and **Visual Resources** (several applicable goals and policies of the Inyo County General Plan and Renewable Energy Ordinance, Title 21).

With the implementation of its recommended mitigation measures (described in each technical section's conditions of certification), potential environmental impacts of the project will be mitigated to levels of less than significant, except in four technical areas: Biological Resources, Cultural Resources, Land Use and Visual Resources. Furthermore, in the areas of Biological Resources, Cultural Resources, and Visual Resources, staff concludes that even with implementation of all feasible mitigation measures, impacts on certain environmental resources would remain significant and unavoidable. As indicated in **Table 4**, below, the technical disciplines where issues exist (with LORS compliance and/or significant impacts determinations and mitigation):

Biological Resources: staff concludes that with implementation of proposed conditions of certification, the project could comply with all federal laws, ordinances, regulations, and standards (LORS) protecting Golden Eagle and migratory birds. Most direct, indirect, and cumulative impacts on biological resources would be avoided, minimized, or mitigated to less than significant levels. Desert tortoise is the only state and federally listed endangered species that would be taken by the proposed project; these impacts can be fully mitigated with the mitigation proposed. Waters of the U.S. and waters of the state would be directly impacted by the proposed project, but these impacts would be reduced to less than significant with implementation of conditions of certification.

Feasible mitigation measures are recommended by staff to lessen impacts on avian species from exposure to solar flux and potential collisions with project features. However, impacts on avian species are still considered significant and unavoidable. Staff is undetermined whether the project complies with state law preventing the “take” of “fully protected” species such as golden eagle.

Cultural Resources: Staff concludes there would be significant and unavoidable impacts to several historical resources, including: an archaeological landscape (the Pahrump Metapatch Mesquite Woodland-Coppice Dune Archaeological Landscape); three ethnographic landscapes (the Salt Song Landscape, Pahrump Paiute Home Landscape and Ma-hav Landscape); and, a historic transportation corridor (Old Spanish Trail–Mormon Road Northern Corridor). Feasible mitigation measures for impacts on these historical resources would reduce some of the impacts of the proposed project, but not to a less than significant level.

Land Use: Staff concludes that the HHSEGS project would not be consistent with the County of Inyo General Plan, Zoning Ordinance and Renewable Energy Ordinance; the proposed project conflicts with these applicable land use plans. Staff has determined that the substantial size of the project, the degree of variation from local planning designations, and the presence of other potential impacts is a conflict with these LORS, and therefore causes a significant environmental impact under CEQA Guidelines Appendix G (Land Use and Planning).

Visual Resources: Staff concludes that the proposed project would substantially degrade the existing visual character or quality of the site and its surroundings. After implementing all recommended conditions of certification, the proposed project would still have significant and unavoidable direct and cumulative visual impacts. Staff also concludes that the project would not be consistent with several applicable goals and policies of the Inyo County General Plan and Renewable Energy Ordinance.

Table 4
Summary of HHSEGS FSA Technical Analyses

Technical Area	Complies with LORS	Impacts Fully Mitigated
Air Quality / GHG	Yes	Yes
Alternatives	Not Applicable	Not Applicable
Biological Resources	Undetermined	NO
Cultural Resources	Yes	NO
Efficiency	Not Applicable	Not Applicable
Facility Design	Yes	Yes
Geology and Paleontology	Yes	Yes

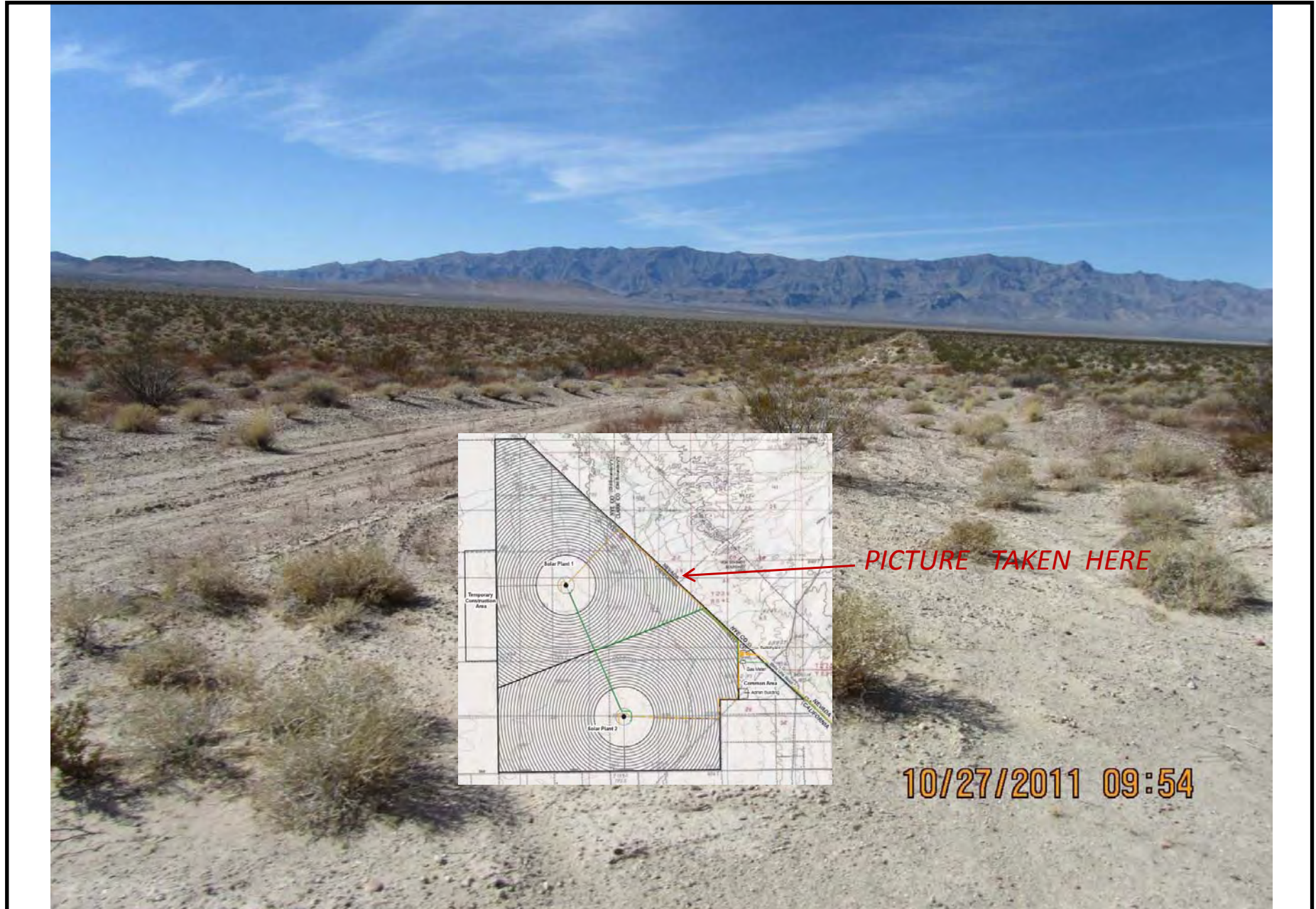
Technical Area	Complies with LORS	Impacts Fully Mitigated
Hazardous Materials Management	Yes	Yes
Land Use	NO	NO
Noise and Vibration	Yes	Yes
Public Health	Yes	Yes
Reliability	Not Applicable	Not Applicable
Socioeconomics	Yes	Yes
Soils and Surface Water	Yes	Yes
Traffic and Transportation	Yes	Yes
Transmission Line Safety and Nuisance	Yes	Yes
Transmission System Engineering	Yes	Yes
Visual Resources	NO	NO
Waste Management	Yes	Yes
Water Supply	Yes	Yes
Worker Safety and Fire Protection	Yes	Yes

SUMMARY

Staff has concluded that the proposed Hidden Hills Solar Electric Generating System does not comply with all applicable LORS, and will have significant impacts to the environment after the implementation of all feasible mitigation. If the Commission certifies the project, it must find that the project would not have significant impacts on the environment or make “overriding findings” that the benefits of the project outweigh the unavoidable significant adverse environmental effects that may be caused by the construction and operation of the facility. Moreover, for those areas not in compliance with LORS, the Commission must make specific findings of “public convenience and necessity”.

EXECUTIVE SUMMARY - FIGURE 1

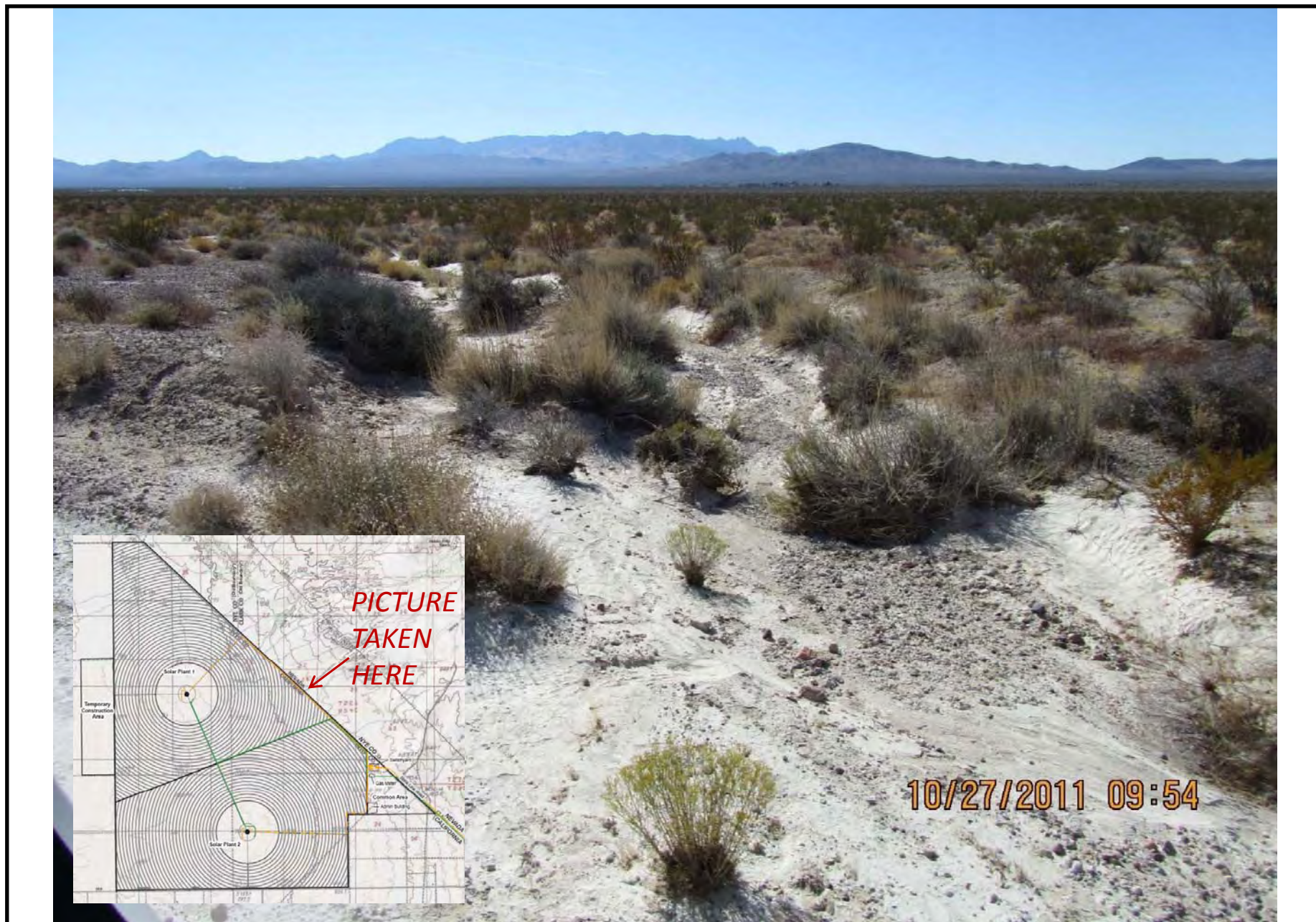
Hidden Hills Solar Electric Generating System (HHSEGS) - Looking west from the CA/NV border towards the Project site, with the Nopah Range in the distance. Overgrown road indicates sub-divided parcels for previously planned housing development.



EXECUTIVE SUMMARY

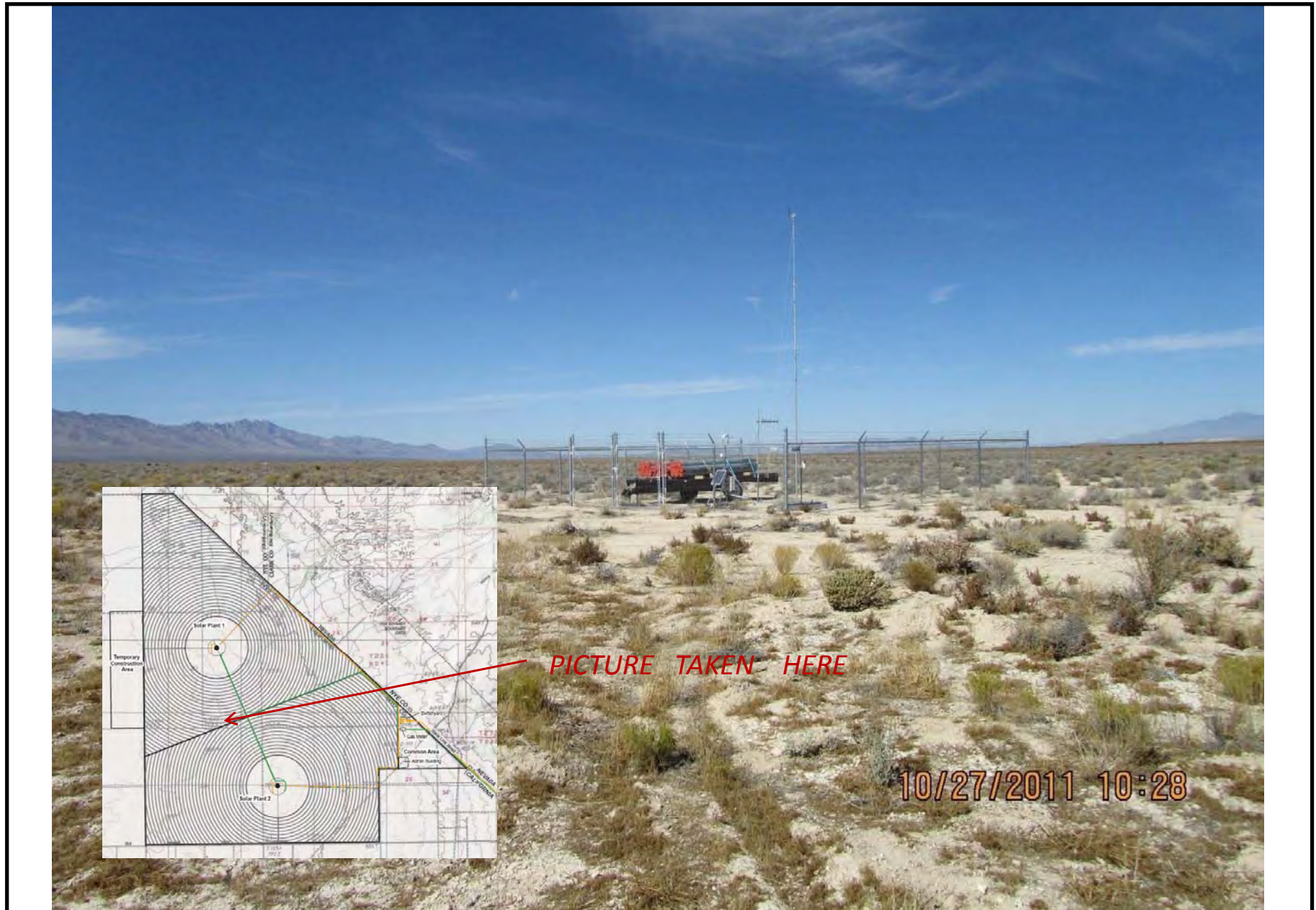
EXECUTIVE SUMMARY - FIGURE 2

Hidden Hills Solar Electric Generating System (HHSEGS) - Looking south over the Project site with the Charleston View community and the Kingston Mountain Range in the distance. Pictured is a weakly braided ephemeral wash, which appeared on the western border of Solar Plant 1 running along the CA/NV border.



EXECUTIVE SUMMARY - FIGURE 3

Hidden Hills Solar Electric Generating System (HHSEGS) - Looking north at BrightSource's Meteorological/Weather Station, located along boundary area between Solar Plant 1 and Solar Plant 2.



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EXECUTIVE SUMMARY - FIGURE 4

Hidden Hills Solar Electric Generating System (HHSEGS) - Site Visit November 3rd, 2011

**Meteorological
Monitoring Station**

**Northern Tower (Solar Field 1) –
approx 2 ½ miles from Tecopa
Road and Site Visit presentation**

**Hidden Hills Committee conducting
walking tour on southern Solar Field 2
during November 3, 2011 Site Visit**



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CUMULATIVE PROJECTS - FIGURE 1

Hidden Hills Solar Electric Generating System (HHSEGS) - Master List of Cumulative Projects

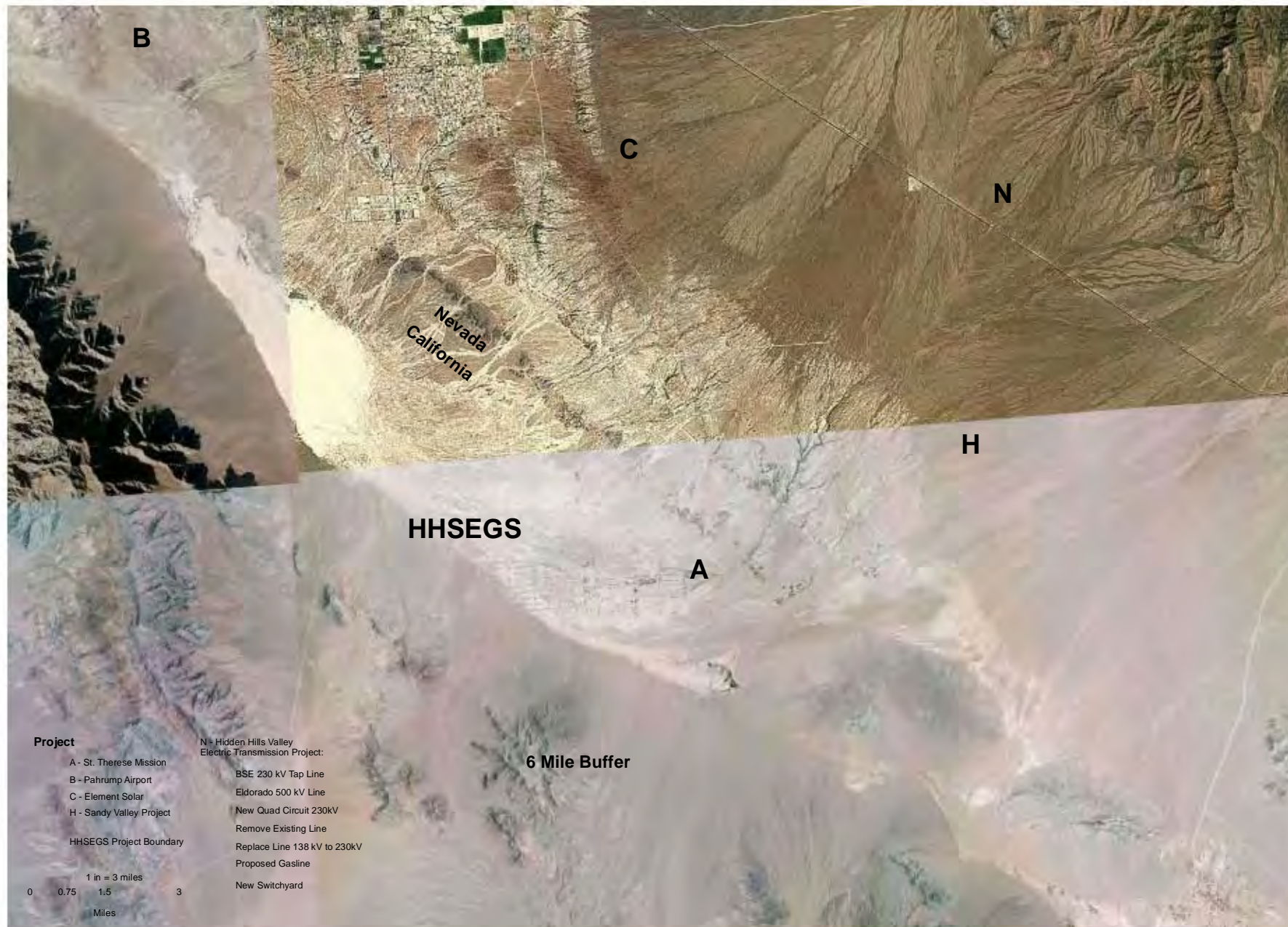


CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: BLM Southern Nevada District - Renewable Energy in Southern Nevada, BLM California - Renewable Energy Priority Projects, and Los Angeles Department of Water and Power.

CUMULATIVE PROJECTS - FIGURE 2

Hidden Hills Solar Electric Generating System (HHSEGS) - Cumulative Projects within a Six Mile Buffer of HHSEGS Boundary



CALIFORNIA ENERGY COMMISSION, SITING, TRANSMISSION AND ENVIRONMENTAL PROTECTION DIVISION

SOURCE: BLM Southern Nevada District - Renewable Energy in Southern Nevada, BLM California - Renewable Energy Priority Projects, and Los Angeles Department of Water and Power.

INTRODUCTION

PURPOSE OF THIS REPORT

This Final Staff Assessment (FSA) is the California Energy Commission staff's independent analysis of the proposed Hidden Hills Solar Electric Generating System (here after referred to as HHSEGS). This FSA is a staff document. It is neither a Committee document, nor a draft decision. The FSA describes the following:

- the proposed project;
- the existing environment;
- whether the facilities can be constructed and operated safely and reliably in accordance with applicable laws, ordinances, regulations and standards (LORS);
- the environmental consequences of the project including potential public health and safety impacts;
- the potential cumulative impacts of the project in conjunction with other existing and known planned developments;
- mitigation measures proposed by the applicant, staff, interested agencies, local organizations and intervenors which may lessen or eliminate potential impacts;
- the proposed conditions under which the project should be constructed and operated, if it is certified; and
- project alternatives.

The analyses contained in this FSA are based upon information from the: 1) Application for Certification (AFC), 2) responses to data requests, 3) supplementary information from local, state, and federal agencies, interested organizations and individuals, 4) existing documents and publications, 5) independent research, and 6) comments at public workshops. The analyses for most technical areas include discussions of proposed conditions of certification. Each proposed condition of certification is followed by a proposed means of "verification." The FSA presents staff's testimony about potential environmental impacts and conformity with LORS, as well as proposed conditions that apply to the design, construction, operation and closure of the facility.

The Energy Commission staff's analyses were prepared in accordance with Public Resources Code section 25500 et seq. and Title 20, California Code of Regulations section 1701 et seq., and the California Environmental Quality Act (CEQA) (Pub. Resources Code, §21000 et seq.)

ORGANIZATION OF THE FINAL STAFF ASSESSMENT

The FSA contains an Executive Summary, Introduction, Project Description and Project Alternatives. The environmental, engineering, and public health and safety analysis of the proposed project is contained in a discussion of 20 technical areas. Each

technical area is addressed in a separate chapter. They include the following: 1) air quality/greenhouse gas; 2) biological resources; 3) cultural resources; 4) facility design; 5) geology and paleontology; 6) hazardous materials management; 7) land use; 8) noise and vibration; 9) power plant efficiency; 10) power plant reliability; 11) public health; 12) socioeconomics; 13) soils and surface water; 14) traffic and transportation; 15) transmission line safety and nuisance; 16) transmission system engineering; 17) visual resources; 18) waste management; 19) water supply; and, 20) worker safety and fire protection; These chapters are followed by a discussion of facility closure, project construction and operation compliance monitoring plans called “General Conditions”, and a list of staff that assisted in preparing this report.

Each of the 20 technical area assessments includes a discussion of:

- laws, ordinances, regulations and standards (LORS);
- the regional and site-specific setting;
- project specific and cumulative impacts;
- mitigation measures;
- conclusions and recommendations; and
- conditions of certification for both construction and operation (if applicable).

ENERGY COMMISSION SITING PROCESS

The Energy Commission has the exclusive authority to certify the construction, modification and operation of thermal electric power plants 50 megawatts (MW) or larger. The Energy Commission certification is in lieu of any permit required by state, regional, or local agencies, and federal agencies to the extent permitted by federal law (Pub. Resources Code, §25500). The Energy Commission must review power plant AFCs to assess potential environmental impacts including potential impacts to public health and safety, potential measures to mitigate those impacts [Pub. Resources Code, §25519), and compliance with applicable governmental laws or standards (Pub. Resources Code, §25523 (d)).

The Energy Commission’s siting regulations require staff to independently review the AFC and assess whether the list of environmental impacts contained is complete, and whether additional or more effective mitigation measures are necessary, feasible and available [Cal. Code Regs., tit. 20, §§1742 and 1742.5(a)]. In addition, staff must assess the completeness and adequacy of the measures proposed by the applicant to ensure compliance with health and safety standards, and the reliability of power plant operations [Cal. Code Regs., tit. 20, §1743(b)]. Staff is required to develop a compliance plan (coordinated with other agencies) to ensure that applicable laws, ordinances, regulations and standards are met [Cal. Code Regs., tit. 20, §1744(b)].

Staff conducts its environmental analysis in accordance with the requirements of CEQA. No additional Environmental Impact Report (EIR) is required because the Energy Commission’s site certification program has been certified by the California Resources Agency as meeting all requirements of a certified regulatory program [Pub. Resources

Code, §21080.5 and Cal. Code Regs., tit. 14, §15251 (j)). The Energy Commission is the CEQA lead agency.

Staff prepares a FSA that presents for the applicant, intervenors, organizations, agencies, other interested parties and members of the public, the staff's analysis, conclusions, and recommendations. Where it is appropriate, the PSA incorporates comments received from agencies, the public and parties to the siting case, comments made at the workshops, and Preliminary Staff Assessment (PSA) comments.

Staff provided a comment period following publication of the PSA to resolve issues between the parties and to narrow the scope of adjudicated issues in the evidentiary hearings. During the period after the publishing of the PSA, staff conducted three community workshops to discuss its findings, proposed mitigation, and proposed compliance-monitoring requirements. Based on the workshops and written comments, staff refined its analysis, corrected errors, and finalized conditions of certification to reflect areas where agreements had been reached with the parties, and now publishes its Final Staff Assessment (FSA).

The FSA is only one piece of evidence that will be considered by the Committee (consisting of two Commissioners who have been assigned to this project, and a Hearing Officer) in reaching a decision on whether or not to recommend that the full, five-member Energy Commission approve the proposed project. At public hearings that will be conducted following publication of the FSA, all parties will be afforded an opportunity to present evidence and to rebut the testimony of other parties, thereby creating a hearing record on which a decision on the project can be based. The hearing before the Committee also allows all parties to argue their positions on disputed matters, if any, and it provides a forum for the Committee to receive comments from the public and other governmental agencies.

Following the hearings, the Committee's recommendation to the full Energy Commission on whether or not to approve the proposed project will be contained in a document entitled the Presiding Member's Proposed Decision (PMPD). Following publication, the PMPD is circulated in order to receive written public comments. At the conclusion of the comment period, the Committee may prepare a revised PMPD. At the close of the comment period for the revised PMPD, the PMPD is submitted to the full Energy Commission for a decision.

AGENCY COORDINATION

As noted above, the Energy Commission certification is in lieu of any permit required by state, regional, or local agencies, and federal agencies to the extent permitted by federal law (Pub. Resources Code, § 25500). However, the Commission typically seeks comments from and works closely with other regulatory agencies that administer LORS that may be applicable to proposed projects. These agencies may include as applicable the U.S. Environmental Protection Agency, U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, U.S. Bureau of Land Management, California State Lands Commission, State Water Resources Control Board/Regional Water Quality Control

Board, California Department of Fish and Game, and the California Air Resources Board.

OUTREACH

The Energy Commission's outreach program is primarily facilitated by its Public Adviser's Office (PAO). This is an ongoing process that provides a consistent level of public outreach, regardless of outreach efforts conducted by the applicant or other parties.

On June 1, 2012, the Energy Commission staff sent the HHSEGS PSA to public libraries in Pahrump and Las Vegas, Nevada, as well as public libraries in Barstow, Bishop, Independence and Tecopa, California. The documents were also sent to state libraries in Eureka, Fresno, Los Angeles, Sacramento, San Diego, and San Francisco.

The PAO's public outreach work is an integral part of the Energy Commission's AFC review process. The PAO reviewed information provided by the applicant and also conducted its own outreach efforts to identify any "sensitive receptors" (including schools, community, cultural and health facilities, daycare and senior-care centers, as well as environmental and ethnic organizations) within a six-mile radius of the proposed site for the project. If present, these sensitive receptors, especially elementary schools, are contacted and kept informed of Energy Commission proceedings through PAO outreach. The PAO also works with the siting division and the governmental affairs office to identify and contact local elected and appointed officials from the area.

The PAO provided notification by letter and enclosed notice of the November 3, 2011 Informational Hearing and Site Visit, held at the Tecopa Community Center in Tecopa, California. Notices were distributed to local residences and community organizations as well as representatives of environmental, Native American, and certain public interest and regulatory organizations with an expressed or anticipated interest in this project. Also, elected and certain appointed officials from Inyo County (California) and Nye County (Nevada) were similarly notified of the hearing and site visit.

Energy Commission regulations require staff to notice, at a minimum, property owners within 1,000 feet of a project and 500 feet of a linear facility (such as transmission lines, gas lines and water lines). This was done for the HHSEGS project. Staff's ongoing public and agency coordination activities for this project are discussed under the Public and Agency Coordination heading in the **EXECUTIVE SUMMARY** section of the **FSA**.

PROJECT DESCRIPTION

Testimony of Mike Monasmith

INTRODUCTION

The Hidden Hills Solar Electric Generating System (HHSEGS) project is being developed by Hidden Hills Solar I, LLC, and Hidden Hills Solar II, LLC. Hidden Hills Solar I, LLC, and Hidden Hills Solar II, LLC, are wholly owned subsidiaries of Hidden Hills Solar Holdings, LLC, which is in turn a wholly owned subsidiary of BrightSource Energy, Inc., (Applicant). As proposed, HHSEGS would be located on approximately 3,096 acres of privately owned land leased in Inyo County, California, adjacent to the Nevada border. The project site is approximately 8 miles directly southeast of Pahrump, Nevada (with a driving distance of 28 miles), and approximately 45 miles northwest of Las Vegas, Nevada (**Project Description Figure 1**).

As proposed, HHSEGS would comprise two solar fields and associated facilities: the northern solar plant (Solar Plant 1) and the southern solar plant (Solar Plant 2). Each solar plant would generate 270 megawatts (MW) gross (250 MW net), for a total net output of 500 MW. Solar Plant 1 will occupy approximately 1,483 acres (or 2.3 square miles), and Solar Plant 2 will occupy approximately 1,510 acres (or 2.4 square miles). A 103-acre common area would be established on the southeastern corner of the site to accommodate an administration, warehouse, and maintenance complex, an onsite 138 kV switchyard and a natural gas metering station. A temporary construction lay down and parking area on the west side of the proposed project site would temporarily occupy approximately 180 acres (**Project Description Figure 2**). The temporary construction laydown area in addition to the entire HHSEGS site would total 3,277 acres.

PROJECT LOCATION AND JURISDICTION

HHSEGS is located in Township 22 North, Range 10 East, Sections (or portions thereof) 15, 16, 20, 21, 22, 23, 26, 27, and 28¹ on privately owned land. The assessor parcel numbers (APNs) for the site are: 048-110-002; 048-120-010; Book 048, page 30, parcels 03 to 06 and 12 to 14; Book 048, page 62, parcels 03 to 06 and 11 to 14, and all parcels in Book 048 pages 50, 60, 61, and 64 through 71.

The project site is located in the southern portion of Pahrump Valley, an internally drained basin bound by the Resting Spring and Nopah Ranges on the west and northwest, by the Kingston Range on the southwest, and by the Spring Mountains on the east. Pahrump Dry Lake lies about three miles northwest of the HHSEGS site. To the southeast, a low divide separates Pahrump Valley from Sandy Valley while, to the northeast, another low divide separates it from Stewart Valley. To the north, the Last Chance Range separates the Pahrump Valley from the Amargosa Desert.

The project site is bordered by paved Old Spanish Trail Highway (also called Tecopa Road) to the south, unpaved Quartz Street to the west, the California-Nevada border to the east, and an unpaved road along the northern border. Numerous unpaved roads

¹ San Bernardino Base and Meridian
December 2012

also extend in a north-south and east-west grid pattern across the site from a 1960's housing subdivision that was never constructed. Please see **Project Description Figure 7** to view existing landscape conditions on the proposed project site. The nearest community to the project site is several dozen residences that comprise Charleston View, immediately south of the project site and Tecopa Road. The closest town is Pahrump, Nevada, located approximately 8 miles directly north of the project area (with a driving distance of approximately 28 miles via Tecopa Road and Nevada State Route 160).

Project access would be from Old Spanish Trail Highway (Tecopa Road) to the project entrance road on the east side of the project (**Project Description Figure 4**). The internal roadway and utility corridors for each heliostat field and its power block would contain a 20-foot-wide paved road from the entrance of the solar plant site to the power block, and then around the power block. Within the heliostat fields, 10-foot wide "drive zones" would be located concentrically around the power block to provide access to the heliostat mirrors for maintenance and periodic cleaning. A 12-foot-wide unpaved path would be constructed on the inside perimeter of the project boundary fence for use by HHSEGS personnel to monitor and maintain perimeter security, and for tortoise exclusion fencing. These paths would be grubbed, bladed, and smoothed to facilitate safe use with minimal grading where necessary to cross washes.

State and Federal Jurisdiction

Once offsite, the HHSEGS transmission line and natural gas pipeline are both located wholly within the state of Nevada, primarily on federal land managed by the Bureau of Land Management (BLM). The Energy Commission has exclusive permitting jurisdiction for the siting of thermal power plants of 50 MW or more and related facilities in California. The Energy Commission also has responsibility for ensuring compliance with the California Environmental Quality Act (CEQA) through the administration of its certified regulatory program. The HHSEGS project site is located within California. As such, the Energy Commission has CEQA jurisdiction over the direct, indirect, and cumulative impacts for proposed activities on the HHSEGS project site.

Once the transmission line and the natural gas pipeline exit the eastern border of the project site into Nevada, the those linear portions of the project are considered a federal action requiring review under and compliance with the National Environmental Policy Act of 1969 (NEPA). The NEPA process for the proposed BLM project (Valley Electric Association Hidden Hills Transmission Project) is anticipated to occur within a 12 month timeframe and consist of several steps. At the early stage in BLM's process, they will identify the range or scope of public and agency issues through comments received in meetings and discussions with relevant agencies and the public. Once the BLM has an understanding of the issues, their study team will begin to gather data on resources within the study area. Based on the description of the proposed project and any alternatives to be evaluated; issues identified; and resource data, an Environmental Impact Statement (EIS) team will assess potential impacts that could result from the project and identify measures to mitigate, or reduce those impacts to a less-than-significant level. A Draft EIS for the Valley Electric Association (VEA) Hidden Hills Transmission Project is expected to be published by BLM (Nevada) in late 2012 or early 2013.

The Energy Commission and BLM staff (from Nevada and California) have coordinated several aspects of their respective CEQA and NEPA regulatory review processes, including the technical disciplines of **Biological Resources**, **Cultural Resources** and **Water Supply**. This coordination, particularly for Biological Resources, involves the active participation of several other state and federal agencies, including the California Department of Fish and Game and the US Fish & Wildlife Service.

PROJECT DESCRIPTION, DESIGN AND OPERATION

This section describes HHSEGS's conceptual design and various aspects of its proposed operation, if approved and once constructed.

PROCESS DESCRIPTION

In each solar plant, one Rankine-cycle non-reheat steam turbine would receive live steam from a *solar receiver steam generator* (SRSG) located in the power block at the top of the solar power tower (**Project Description Figure 5**). The solar field and power generation equipment would be started each morning after sunrise and insolation build-up, and would shut-down when insolation drops below the level required keeping the turbines online. Natural-gas-fired auxiliary boilers may also be used to extend daily power generation and to pre-warm the SRSG to minimize the amount of time required for startup each morning, to assist during shutdown cooling operation, and to augment the solar operation during the evening shoulder period as solar energy diminishes.

Power Cycle

Solar energy is reflected by the heliostats onto the SRSG where the energy heats water into superheated steam. The steam is then routed via the main steam pipe to the steam turbine generator (STG) where the steam's energy is converted to electrical energy. The solar plant's power cycle is based on a Rankine-cycle steam turbine with three pressure stage casings. Primary thermal input is via an SRSG located at the top of the solar power tower. Live superheated steam enters a high pressure (HP) turbine casing at 2,466 pounds per square inch absolute (psia) and 1,085 degrees Fahrenheit (°F). Following expansion through the HP turbine, the steam is conveyed to the inlet of the intermediate pressure (IP) turbine. Steam enters the IP turbine at 535 psia and 666°F. Upon exiting the IP turbine, the steam travels via the crossover pipe to the inlet of the low pressure (LP) turbine. Steam enters the LP turbine at 78 psia and 310° F and exits at 1.6 psia or 3.25 inches of mercury into the air-cooled condenser.

Condensate is sent from the condenser well through four low-pressure feed water heaters to the deaerator, which also serves for feed water reserve storage and is the point of feed water make-up injection. From the deaerator, high-pressure feed water pumps send feed water through three high pressure feed water heaters and it is returned to the SRSG.

PROJECT FEATURES AND FACILITIES

Each solar plant would use heliostats (elevated mirrors guided by a tracking system mounted on a pylon) to focus the sun's rays on a solar receiver steam generator (SRSG) – a solar boiler that produces steam used to generate electricity – atop a solar power tower near the center of each solar field. The solar field and power generation equipment would start each morning after sunrise and, unless augmented, would shut down when insolation (sun ray and intensity) drops below the level required keeping turbines online and producing electricity. Please see **Project Description Figure 8** for an illustration of HSEGS technology.

Heliostats

Each of the heliostat assemblies is composed of two mirrors, each approximately 12 feet high by 8.5 feet wide with a total reflecting surface of 204.7 square feet. Each heliostat assembly is mounted on a single pylon, along with a computer-programmed aiming control system that directs the motion of the heliostat to track the movement of the sun. Communication between the heliostats and the operations center will be done via surface-mounted anchored cable or wireless remote system. The solar field for each solar plant will consist of approximately 85,000 heliostats, for a total of 170,000.

Solar Plants

The following provides further details regarding the two 270-MW (250-MW net) solar plants.

- The SRSG located at the top of the 590 foot tall solar power tower is approximately 160 feet tall, resulting in an overall power tower height of approximately 750 feet.
- No heliostat will be built closer than 394 feet from the solar power tower location.
- For Solar Plant 1, the distance between the solar power tower and the farthest heliostat in the solar field, approximately 7,660 feet, is in the northwest section of the heliostat array. For Solar Plant 2, the longest distance between the solar power tower and the farthest heliostat in the solar field (approximately 6,523 feet) is in the northeast section of the heliostat array. Generally, this is due to the higher efficiency of heliostats in the northern section in the northern hemisphere. With the sun predominantly in the southern sky, the cosine effect of incidence and reflection angles is less in the northern heliostats than in the southern ones. The converse (lower collection efficiency in the southern section) is also true, and, therefore, the maximum southern arc radius is the shortest.
- The eastern sector heliostat energy collection is more valuable than the western sector collection because afternoon energy collection, during on-peak utility hours, is more valuable than morning energy collection, during part-peak or off-peak hours.

Steam Turbine Generator

The steam turbine system consists of a condensing STG with gland steam system, lubricating oil system, hydraulic control system, and steam admission/induction valving. HP steam from the SRSG super-heater enters the HP steam turbine section through the inlet steam system. The steam expands through multiple stages of the turbine, driving

the generator. On exiting the LP turbine, the steam is directed into the air-cooled condenser.

Natural Gas Boilers

Each solar plant would include a 249 MMBtu/hr natural gas fired auxiliary boiler that would be used to pre-warm the SRSG to minimize the amount of time required for startup each morning, to assist during shutdown cooling operation, and to augment the solar operation during the evening shoulder period as solar energy diminishes. Additionally, each solar plant would include a 15 MMBtu/hr nighttime preservation boiler to maintain system temperatures overnight.

Boiler Feed water System

The boiler feed water system transfers feed water from the deaerator to the SRSG. The System would consist of one turbine driven pump (booster and main), one motor driven backup (booster and main) feed water pump, and one motor driven startup pump. The turbine driven pump is sized for 100% capacity for supplying the SRSG. The startup pump would be sized for 25% capacity and include a variable frequency drive (VFD). The backup pump would be sized for 50% turbine load and include a VFD. The pumps would be multistage, horizontal and would include regulating control valves, minimum flow recirculation control and other associated piping and valves.

Condensate System

The condensate system would provide a flow path from the condensate collection tank to the deaerator. The condensate system would include two 50% capacity multistage vertical, motor-driven condensate pumps with VFDs. The system would also include deep bed condensate polishers with offsite regeneration.

Demineralized Water System

The demineralized water system would consist of ion exchanges. Resin media from the vessels would be regenerated off site by a third party water treatment supplier. Spare resin for the two plants would be stored in the warehouse located in the common area. Demineralized water would be stored in the demineralized water tank.

Power Cycle Makeup and Storage

The power cycle makeup and storage subsystem provides demineralized water storage and pumping capabilities to supply high purity water for system cycle makeup and chemical cleaning operations. Major components of the system are the demineralized water storage tank; demineralized water treatment system, and two 100% capacity, horizontal, centrifugal cycle makeup water pumps.

Water Supply and Use

Groundwater would be drawn daily from six onsite groundwater supply wells that would be drilled and developed to provide raw water for the HHSEGS project; two new wells per power block (primary and backup) and two wells at the administration complex. The wells would supply both solar plants and would be used for the power cycle make-up water, mirror wash water, and other domestic uses. The entire 500-MW net project

would require up to 84.5 gallons per minute (gpm) (average) raw water make-up, with 30 to 50 gpm required by each plant, and 3.5 gpm (average) required for potable water use (please see the **Water Supply** section of this **FSA** for more details).

HHSEGS will generate electricity up to 16 hours a day, with the exception of a scheduled shutdown in late December for maintenance. However, the water treatment plant would operate continuously in order to minimize water treatment system size and capital cost, and to use off-peak energy at night. A breakdown of the estimated average daily quantity of water required for HHSEGS operation is presented in **Table 1**. The daily water requirements shown are estimated quantities based on HHSEGS operating at full load.

TABLE 1
Average Daily Water Requirements with Both Solar Plants in Operation

Water Use	Average Daily Use (gpm)	Annual Use (ac-ft/yr)
Process and heliostat wash	84.5	135
Potable water service (including Common Area)	3.5	5

ac-ft/yr = acre-feet per year

To reduce the number of truck trips during construction, the applicant intends to drill a temporary well to be used during construction only, primarily for the onsite concrete batch plant used to serve project construction needs. This temporary well will eliminate the need to bring water to the construction area via tanker truck, and will not increase water usage above the 288 acre-feet per year needed during 29 months of construction, which is expected to take place from the second quarter of 2013 to the fourth quarter of 2015.

Electrical Transmission System

HHSEGS will interconnect to the Valley Electric Association (VEA) system.² The interconnection would require an approximately 10-mile-long generation tie-line (gen-tie line) from the HHSEGS to the proposed Crazy Eyes Tap Station,³ where the project would interconnect to the VEA electric grid. The gen-tie line would originate at the HHSEGS' onsite switchyard, cross the Nevada state line, and continue east for approximately 1.5 miles until reaching Tecopa Road. At Tecopa Road, the route would head northeast paralleling Tecopa Road until it reaches the Crazy Eyes Tap Substation, which would be located immediately east of the Tecopa Road/SR 160 intersection (see **(Project Description Figure 6)**). The Crazy Eyes Tap Substation would interconnect to the existing VEA Pahrump-Bob Tap 230-kV line.

The bulk of the electric power produced by the facility would be transmitted to the grid. A small amount of electric power would be used onsite to power auxiliaries such as pumps and fans, control systems, and general facility loads including lighting, heating,

² In January, 2013, VEA will become a participating transmission owner (PTO) and will turn operational control of its facilities over to the California Independent System Operator (CAISO).

³ In the HHSEGS AFC, and in the Preliminary Staff Assessment published on 5/24/2012, this substation was referred to as the "Tap Substation."

and air conditioning. Some power would also be converted from alternating current (AC) to direct current (DC) and stored in batteries, which would be used as backup power for the plant control systems and essential uses. No electrical power would be made available off-site.

Natural Gas Supply System

A 12-inch-diameter natural gas pipeline would be required for the project. The gas pipeline would enter the HHSEGS site in the common area where it would connect with an onsite gas metering station. It would exit the HHSEGS site at the California-Nevada border, extending 32.4 miles to the Kern River Gas Transmission (KRG T) existing mainline system just north of Goodsprings in Clark County, Nevada (see **Project Description Figure 6**).

Plant Cooling Systems

The cycle heat rejection system would consist of an air-cooled steam condenser system. The heat rejection system would receive exhaust steam from the low-pressure section of the steam turbine and feed water heaters and condense it back to water for reuse. The condenser would be designed to normally operate at a pressure of about 3.2 inches of mercury absolute (0.11 millibar absolute). The condenser would remove heat from the condensing steam up to a maximum of 1,140 million British thermal units per hour (MMBtu/hr), depending on ambient temperature and plant load. An auxiliary cooling system would cool the generator, steam turbine generator lubrication oil, boiler feed pump lubricating oil, SRSG circulating water pumps, and other equipment requiring cooling. A maximum of 34 MMBtu/hr would be rejected to the atmosphere via a fin-fan heat exchanger. Above 85°F, the fin-fan heat exchanger would be assisted by wet surface air coolers using intermediate quality deionized water.

Fire Protection

The fire protection system would be designed to protect personnel and limit property loss and plant downtime in the event of a fire. The primary source of fire protection water will be the raw water storage tank. Each solar plant would have a raw water tank with a capacity of 250,000 gallons. A portion of the raw water (100,000 gallons) is for plant use while the majority would be reserved for fire water. An electric jockey pump and electric-motor-driven main fire pump would be provided to increase the water pressure in the plant fire main to the level required to serve all fire fighting systems. In addition, a back-up, diesel-engine-driven fire pump would be provided to pressurize the fire loop if the power supply to the electric-motor-driven main fire pump fails. A fire pump controller would be provided for each fire pump.

The fire pump would discharge to a dedicated underground firewater loop piping system. Normally, the jockey pump would maintain pressure in the firewater loop. Both the fire hydrants and the fixed suppression systems would be supplied from the firewater loop. Fixed fire suppression systems would be installed at determined fire risk areas such as the transformers and turbine lube oil equipment.

Sprinkler systems would also be installed in the administration complex buildings and fire pump enclosure as required by National Fire Protection Association (NFPA), and

local code requirements. Handheld fire extinguishers of the appropriate size and rating would be located in accordance with NFPA 10 throughout the facility. The project site is within the Southern Inyo Fire Protection Department (SIFPD) jurisdiction. Please refer to the **Worker Safety / Fire Protection** section of this **FSA** for more detailed specifics related to all aspects of fire response and emergency services for HHSEGS construction and operation.

HAZARDOUS MATERIALS

There will be a variety of hazardous materials used and stored during construction and operation of the Project. The **Hazardous Materials Management** section of this **FSA** provides additional data on the hazardous materials that will be used during construction and operation, including quantities, associated hazards and permissible exposure limits, storage methods, and special handling precautions. Hazardous materials that will be used during construction include gasoline, diesel fuel, oil, lubricants, and small quantities of solvents and paints. All hazardous materials used during construction and operation will be stored on site in storage tanks, vessels and containers that are specifically designed for the characteristics of the materials to be stored; as appropriate, the storage facilities will include the needed secondary containment in case of tank/vessel failure.

WASTE MANAGEMENT

Waste management is the process whereby all wastes produced at the project site are properly collected, treated (if necessary), and disposed of. Wastes include process and sanitary wastewater, nonhazardous waste, and hazardous waste, both liquid and solid. The **Soils and Surface Water** section of this **FSA** discusses process wastewater and sanitary wastewater. For all other wastes, the **Waste Management** section of this **FSA** will detail the process by which both hazardous and nonhazardous wastes from HHSEGS construction and operation will be appropriately stored, transferred and disposed.

EMISSION CONTROL AND MONITORING

Air emissions from the combustion of natural gas in the auxiliary-boilers at each plant would be controlled using appropriate air emission control devices. The auxiliary boilers are subject to acid rain requirements; however, because of their low emissions, they are eligible to use the low mass emissions (LME) methodology and will not be required to use acid rain continuous emissions monitoring systems (CEMS).

PROJECT CONSTRUCTION AND CLOSURE

The Construction of HHSEGS, from perimeter fencing to site preparation and grading to commercial operation, is expected to take place from the second quarter of 2013 to the fourth quarter of 2015 (29 months total). Major milestones are listed in **Table 2** (although the construction order may change). Construction of the common area facilities would occur concurrently with the construction of the first plant.

Table 2
Project Schedule Major Milestones

Activity	Date
Solar Plant 1	
Fencing and tortoise clearance	Second Quarter 2013
Begin construction	Second Quarter 2013
Startup and commissioning	Second Quarter 2015
Commercial operation	Third Quarter 2015
Solar Plant 2	
Fencing and tortoise clearance	Second Quarter 2013
Begin construction	Third Quarter 2013
Startup and commissioning	Third Quarter 2015
Commercial operation	Fourth Quarter 2015

The construction workforce need would range from a high of 2,293 workers in month 19, a low of 128 workers in the first month, and an average of 1,087 workers during the entire 29-month construction period. A permanent operations workforce of 100 workers would be needed for the project. A comprehensive workforce analysis can be reviewed in the **Socioeconomics** section of this **FSA**.

The nearest residence to the proposed project would be approximately 3,500 feet south of Solar Plant 2, and 950 south of the perimeter. The St. Therese Mission is approximately 1.7 miles from the nearest power block (Solar Plant 2). Noisy construction activities occurring within 500 feet of existing noise sensitive uses would be limited to the hours of 7:00 a.m. to 7:00 p.m. Monday through Saturday. Generally, construction activities would occur from 5:00 a.m. to 3:30 p.m. with a swing shift from 6:00 p.m. to 4:30 a.m. Additional hours may be necessary to make up schedule deficiencies, or to complete critical construction activities (e.g., tower construction, foundation pouring, or working around time-critical shutdowns and constraints). During some construction periods and during the startup phase of the project, some activities would continue 24 hours per day, seven days per week. Specific information on noise impacts can be reviewed in the **Noise and Vibration** section of this **FSA**.

PROJECT CONSTRUCTION

General Grading and Leveling

The surface soil grade of each area would be designed for access of installation equipment and materials during site construction and operations. Most of the natural drainage features would be maintained and any grading required would be designed to promote sheet flow where possible. Heavy to medium grading would be performed within each plant's solar power tower and power block areas, for the switchyard, within the administration complex area, and for the heliostat assembly buildings. The deepest excavations would be restricted to foundations and sumps. Within each of these individual areas, earthwork cuts and fills will be balanced to the degree possible. The earthwork within the power blocks and common area would be excavated and compacted to the recommendations of the associated geotechnical report. At some washes, limited grading may be required. Surface rocks and boulders would need to be

relocated to allow proper installation of heliostats and facilities when they cannot be avoided.

Storm Drainage System

The majority of the project site would maintain the original grades and natural drainage features and, therefore, will require no added storm drainage control. In limited areas, such as the power blocks, switchyard, heliostat assembly buildings and administrative areas, the storm water management system would include diversion channels, bypass channels, or swales to direct run-on flow from up-slope areas and run-off flow through and around each facility. Diversion channels would be designed so that a minimum ground surface slope of 0.5% would be provided to allow positive, puddle-free drainage. To reduce erosion, storm drainage channels may be lined with non-erodible materials such as compacted rip-rap, geo-synthetic matting, or engineered vegetation. The design would be developed for sheet flow for all storm events less than or equal to a 100-year, 24-hour storm event. All surface runoff during and after construction would be controlled in accordance with the requirements of the Drainage, Erosion, and Sedimentation Control Plan, and all other applicable LORS.

Erosion and Sediment Control Measures

Protection of soil resources would be an important factor in the design of the erosion and sedimentation controls. To minimize wind and water erosion, open spaces would be preserved and left undisturbed maintaining existing vegetation to the extent possible with respect to site topography and access requirements. Areas compacted during construction activities would be restored, as appropriate, to approximate preconstruction compaction levels to minimize the opportunity for any increase in surface runoff. If needed, stone filters and check dams would be strategically placed throughout the project site to provide areas for sediment deposition and to promote the sheet flow of storm water prior to leaving the project site boundary. Native materials (rock and gravel) would be used for the construction of the stone filter and check dams. Diversion berms would be used to redirect storm water around critical facilities (please see the **Soils and Surface Water** section of this **FSA** for more analysis).

Periodic maintenance would be conducted as required after major storm events and when the volume of material behind the check dams exceeds 50% of the original volume. Stone filters and check dams are not intended to alter drainage patterns but to minimize soil erosion and promote sheet flow

Solar Field Preparation

Vegetation clearing, grubbing, and contour smoothing in the solar fields would occur where necessary to allow for equipment access and storm water management. In areas where these activities are not required for access or construction, the vegetation will not be removed but would be mowed (if needed) to a height of approximately 12 to 18 inches.

A linear swath of vegetation along the outer edge of each heliostat field would be cleared, grubbed and smoothed to create an external perimeter path for installation and

maintenance of the tortoise and security fence and associated external perimeter inspection roads. Grading of the roads would be performed in limited areas to afford safe passage of vehicles. To allow for external roads, the setback area from the property line would be a minimum of 8 to 12 feet between the tortoise fence and the property line. Additional setbacks may be required due to installation of gas and electric utilities. Elsewhere, vegetation would remain but would be cut (when necessary) to a height that will allow clearance for heliostat function while leaving the root structures intact. Occasional cutting of the vegetation would be performed as needed to permit unobstructed heliostat mirror movement.

Drive zones would be used for installation of the heliostats and then subsequent washing of the mirrors. The drive zones would be located approximately every 152 feet in a circumferential fashion surrounding the power blocks. The drive zones would be approximately 10 feet wide and would be cleared, grubbed, smoothed, and rolled to permit safe and efficient installation of the heliostats and washing of the mirrors. The shoulders of washes crossed by the drive zones would be graded as necessary to permit safe passage of vehicles for installation and maintenance activities.

Installation of Heliostats

The heliostats will be installed in two steps. Initially, the support pylons would be installed using vibratory technology to insert the pylons into the ground (pre-augering prior to the installation of the pylon may be required). Then, the heliostat assembly (mirrors, support structure and aiming system) would be mounted on the pylon. The siting of pylons would be guided by global positioning system (GPS) technology. Pylons would be delivered to their locations by an all-terrain vehicle. Installation of the heliostat assemblies would be accomplished with a rough terrain crane. The crane would be able to mount heliostat assemblies on several pylons before moving to the next location.

Construction of Power Blocks

Project construction would commence with the building of site roads and the installation of temporary construction facilities including office trailers, parking areas, material lay down areas, a concrete batch plant, and a heliostat assembly facility. The construction of each plant would begin with the excavation and placement of foundations and other underground facilities. Superstructures and equipment would then be placed on the foundations. Major items include the 750-foot-tall solar power tower and SRSG construction, the STG pedestal and STG, and construction of the air-cooled condenser. Once the mechanical equipment is in place, construction would continue with the installation of the piping, electrical equipment, and cables necessary to connect and power the equipment. Upon completion of construction, the checkout, testing, startup and commissioning of the various plant systems would begin resulting in a fully operational solar plant.

Restoration of Temporary Disturbance

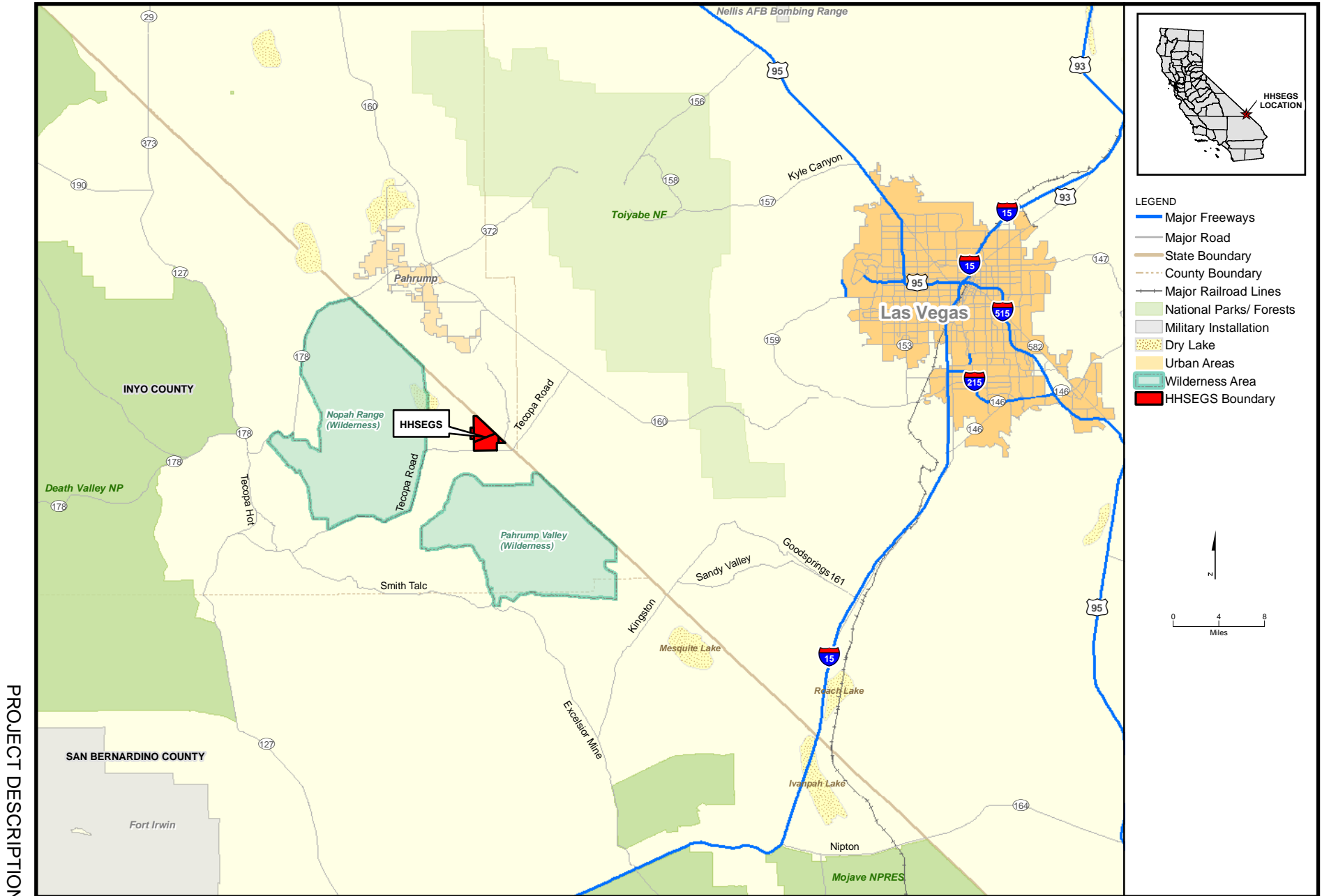
As proposed, temporarily disturbed areas will be restored to their preconstruction conditions. Temporary access roads used during construction will also be re-graded and restored to pre-existing function and grade. Approved seed mixes will be applied to

temporarily disturbed areas, as required. No fertilizer will be used during stabilization or rehabilitation activities unless specifically authorized. No vegetation will be restored or encouraged within the solar field because of the fire hazard. Vegetation within the common area will be controlled to prevent containment from being compromised. When construction of storm water management structures is complete, contours will be carefully restored to the extent feasible.

FACILITY CLOSURE

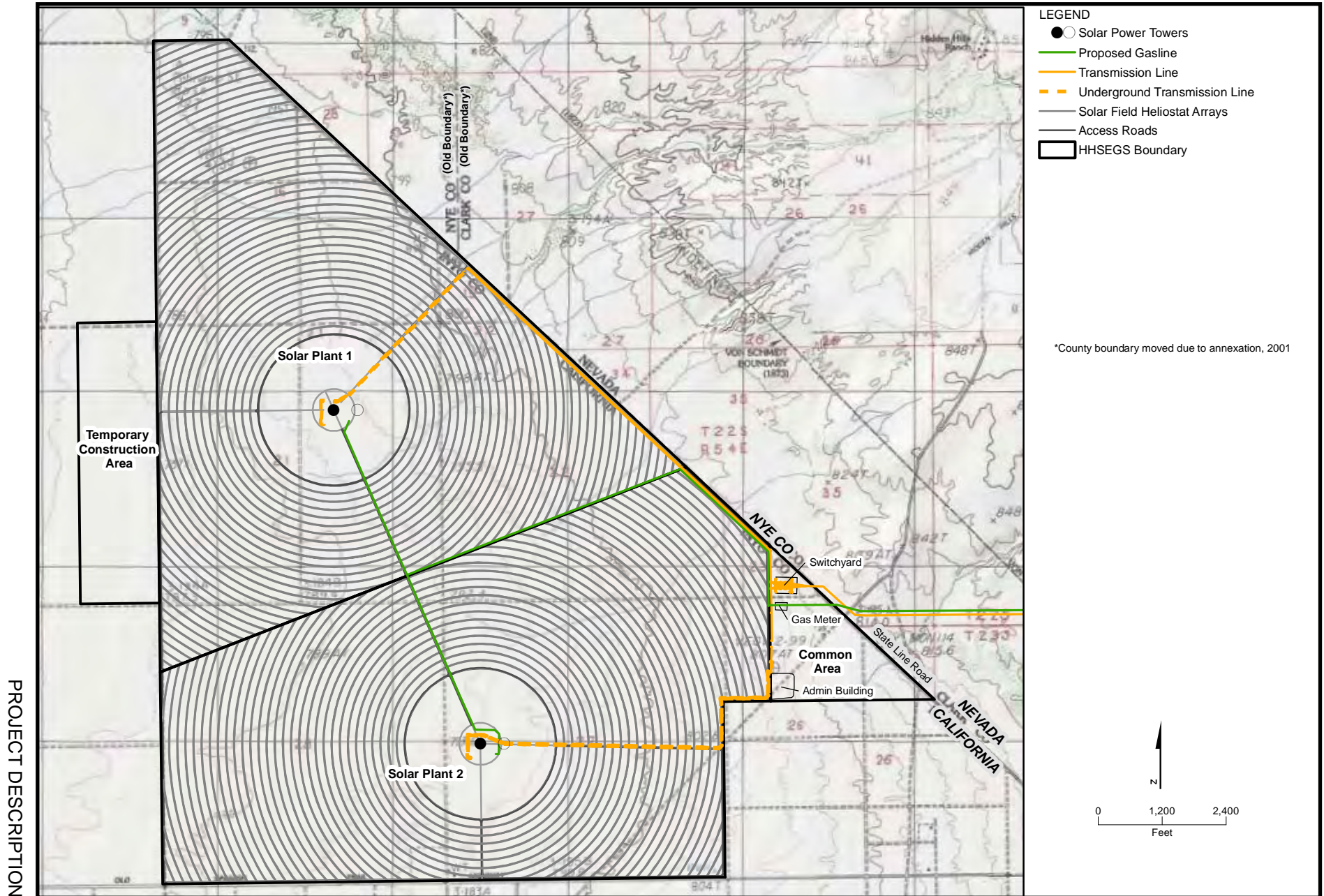
At some point in the future, the project will cease operation, and the facility will close down. At that time, it will be necessary to ensure that the closure occurs in such a way that public health and safety and the environment are protected from adverse impacts. Although the project setting for this project does not appear, at this time, to present any special or unusual closure problems, it is impossible to foresee what the situation will be in 30 years or more when the project ceases operation. Therefore, provisions must be made that provide the flexibility to deal with the specific situations and project setting that exist at the time of closure. Facility closure will be consistent with Laws, Ordinances, Regulations and Standards (LORS) in effect at the time of closure, and are discussed in the **General Conditions** section of this **FSA**.

PROJECT DESCRIPTION - FIGURE 1
Hidden Hills Solar Electric Generating System (HHSEGS) - Vicinity Map



PROJECT DESCRIPTION - FIGURE 2

Hidden Hills Solar Electric Generating System (HHSEGS) - Site Plan and Linear Facilities

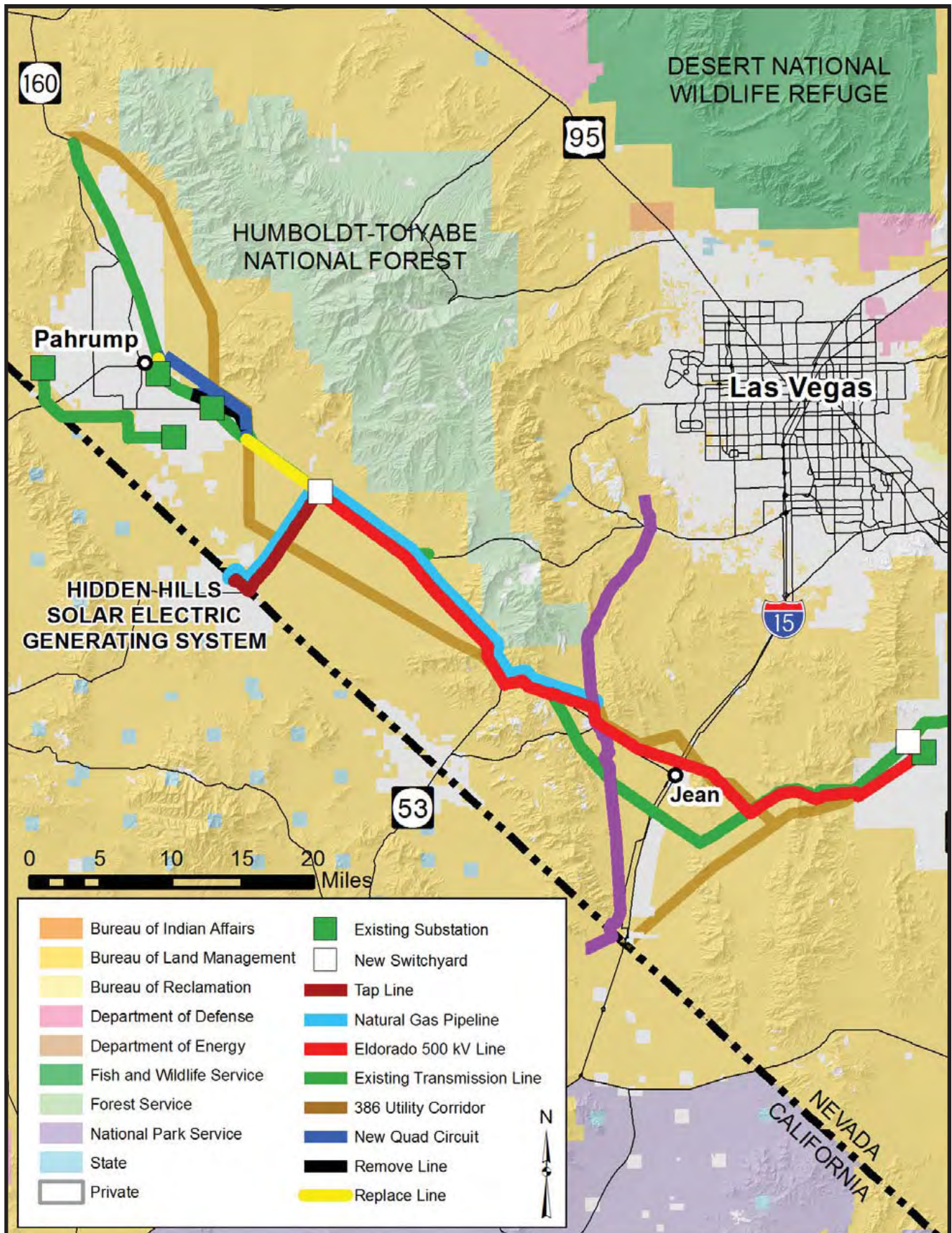


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SOURCE: Figure 2.1-2R1, CH2MHILL

PROJECT DESCRIPTION - FIGURE 3

Hidden Hills Solar Electric Generating System (HHSEGS) - Project Description Map

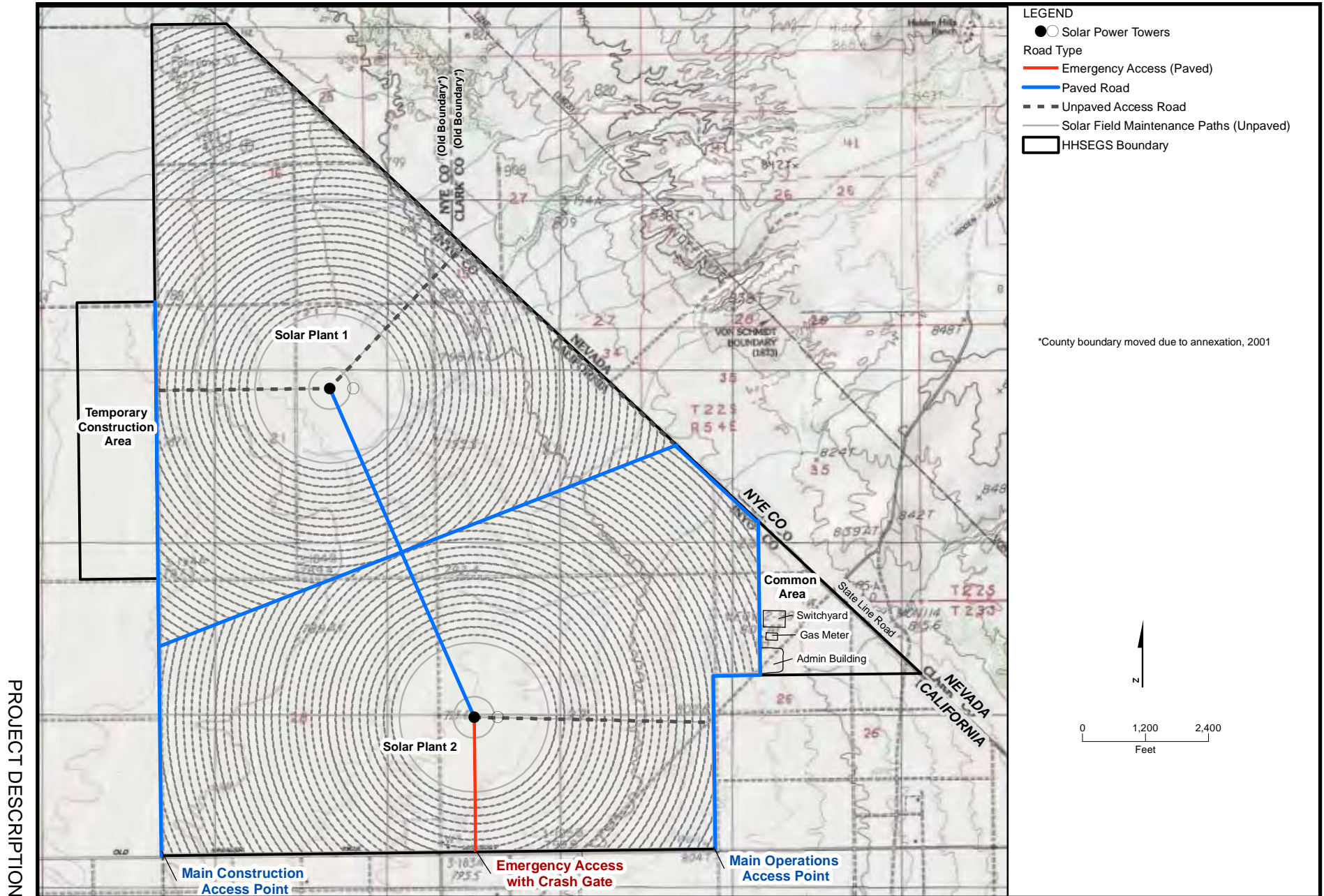


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SOURCE: Bureau of Land Management Draft EIS, Nov. 2011

PROJECT DESCRIPTION - FIGURE 4

Hidden Hills Solar Electric Generating System (HHSEGS) - Access Roads and Paved Internal

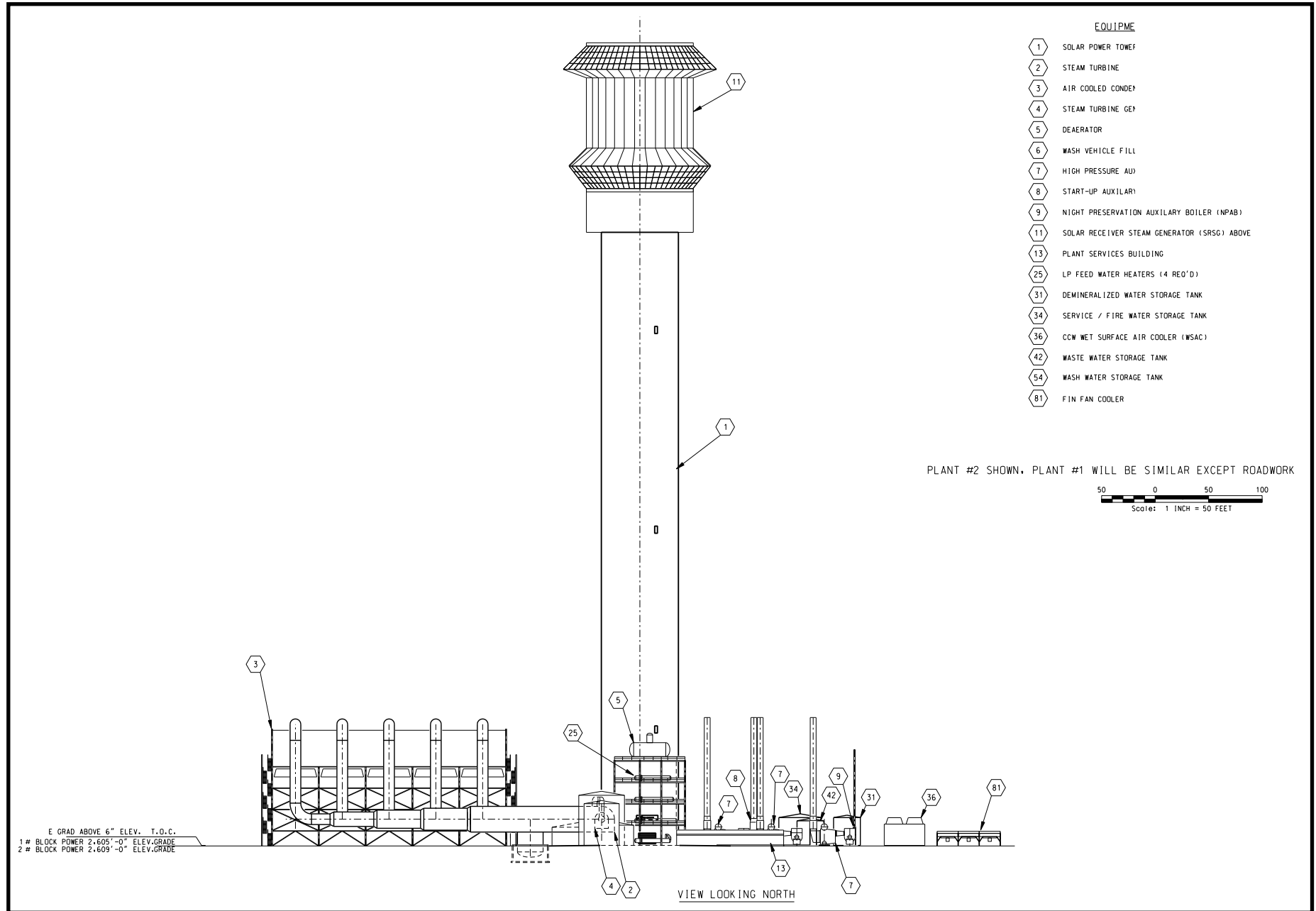


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SOURCE: AFC, August 2011, Figure DR, CH2MHILL

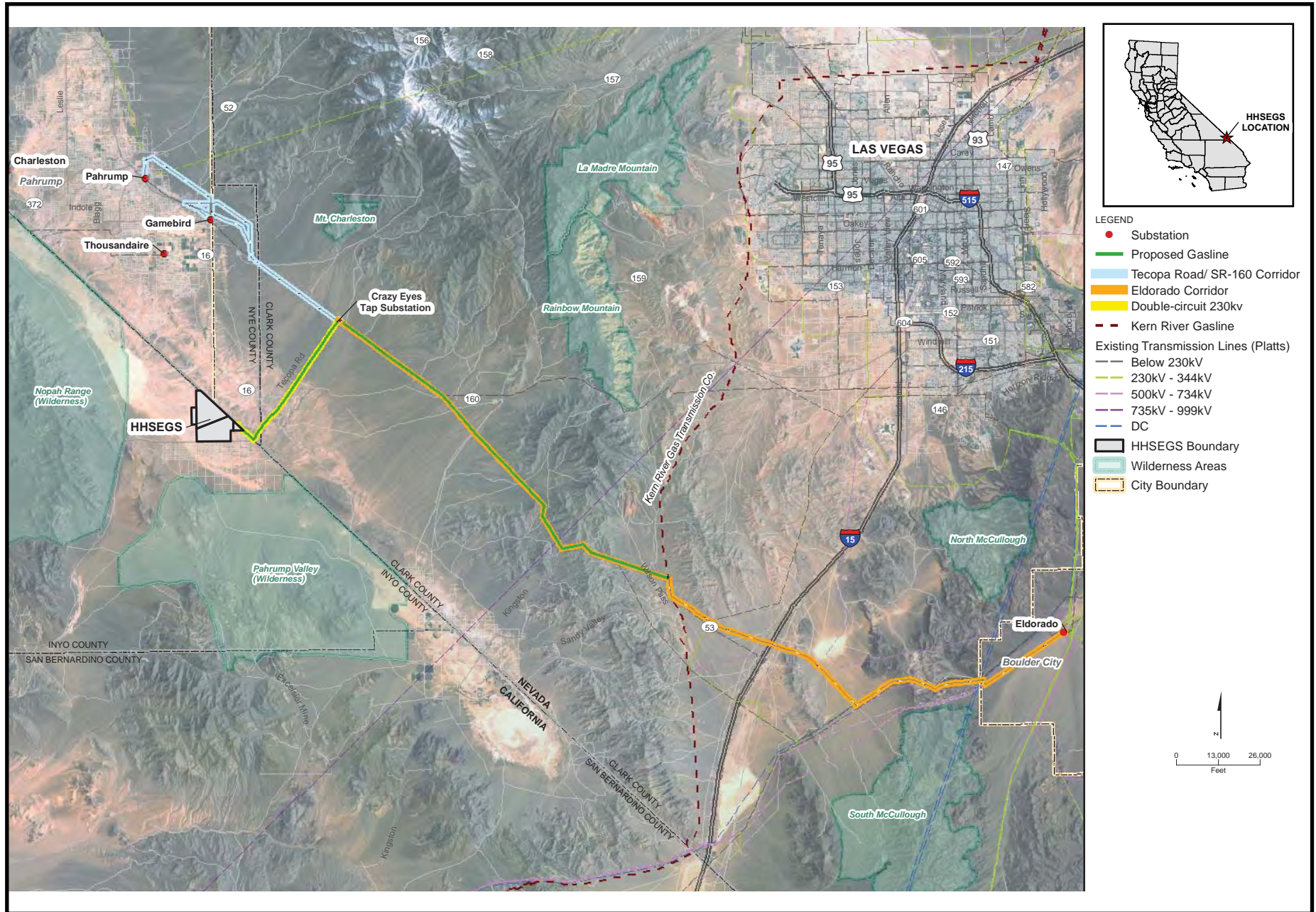
PROJECT DESCRIPTION - FIGURE 5
Hidden Hills Solar Electric Generating System (HHSEGS) - Solar Plant 2 Elevation

PROJECT DESCRIPTION

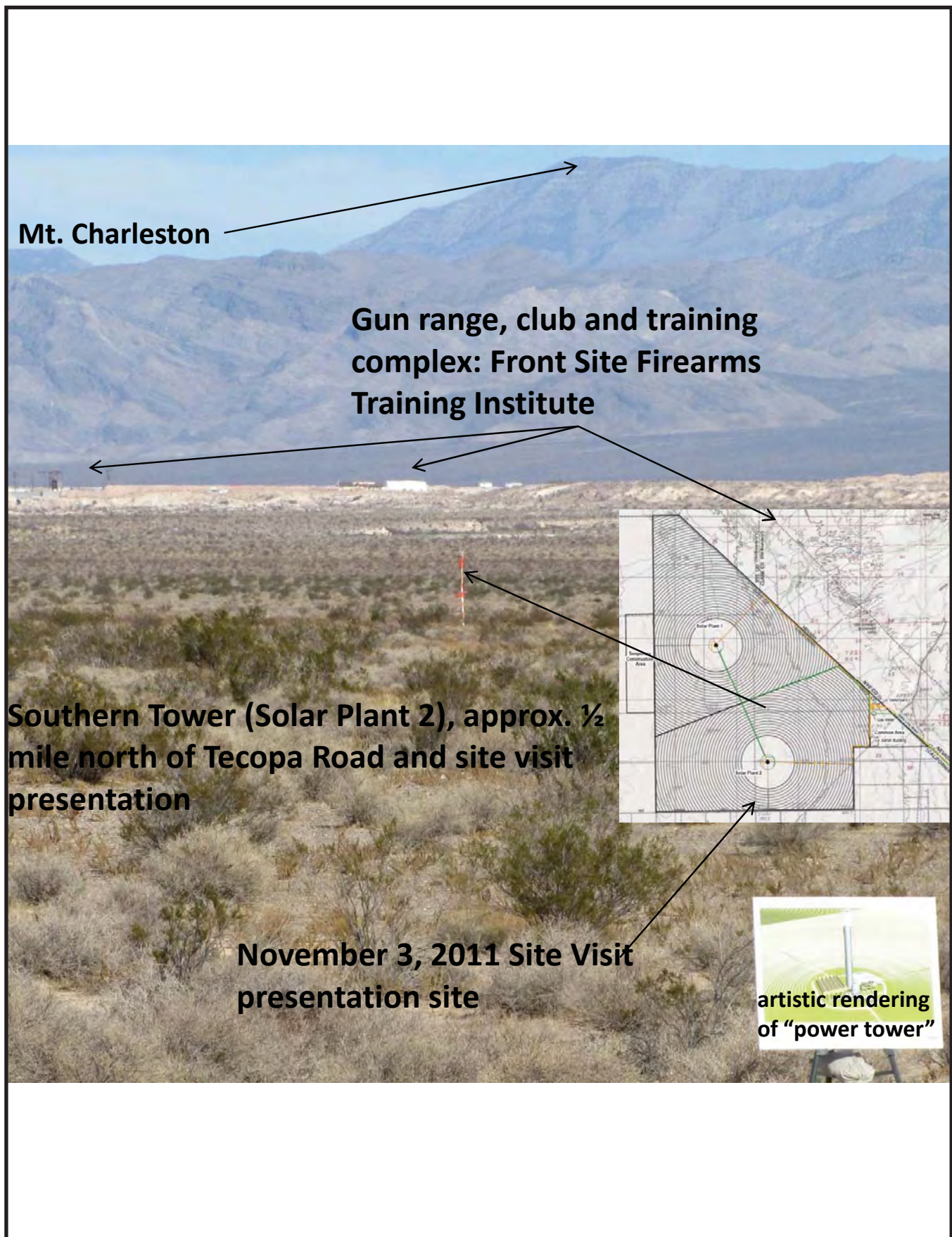


PROJECT DESCRIPTION - FIGURE 6
Hidden Hills Solar Electric Generating System (HHSEGS) - Linear Corridors

PROJECT DESCRIPTION



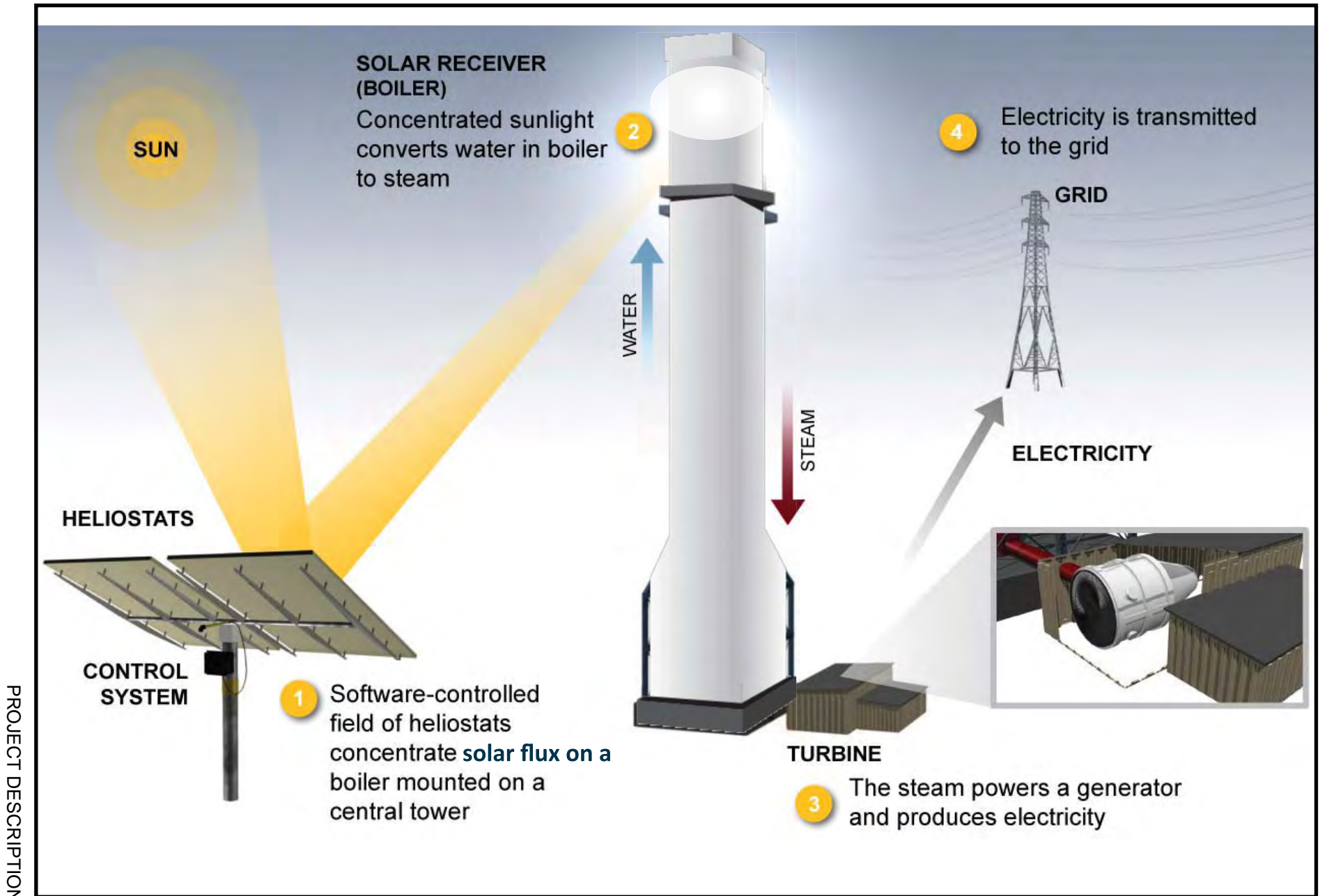
PROJECT DESCRIPTION - FIGURE 7
Hidden Hills Solar Electric Generating System (HHSEGS) - Site View



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SOURCE: Staff Photo, 11/3/2011

PROJECT DESCRIPTION - FIGURE 8

Hidden Hills Solar Electric Generating System (HHSEGS) - Technology Overview



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SOURCE: 11-AFC-2 Hidden Hills TN 68362 BrightSource Energy-submitted Power Point Presentation for August 28, 2012 Joint Workshop, page 11